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GREAT LAKES TOWING CO.

ALL HARBOR TUGS TO BE PURCHASED BY THE VESSEL OWNERS—STOCK SUBSCRIBED TWO OR THREE TIMES OVER AND THE DEAL PRACTICALLY CONSUMMATED.

Rumors of a combination of harbor tug interests on the great lakes have been heard repeatedly for two or three months past. All negotiations up to a week or ten days ago were of a very uncertain kind, but it can be said positively now that within the next few weeks every harbor tug line from Buffalo to Duluth and Chicago will be owned by a company made up of the leading vessel owners. This statement is made in advance of the actual transfer of a single tug, but the new organization is so strong that there is little probability of any of the lines holding out against it. It is a case of the vessel owners who have the ships to tow going to the tug owners and saying: "We want to purchase your tugs outright. We have the great bulk of the business. Sell to us or lose our patronage and take the chances also of meeting with competition from such of the tugs as we may spare for transfer to any part of the lakes from the fleet which we are certain to purchase."

This seems at first thought like an unfair proposition to the men who have spent a life-time building up a business in harbor towing, but it is overstretching the situation. It is the intention to pay fair prices for the property, as has been the case with all big undertakings of this kind, and there will, of course, be places in the management for most of the heads of lines operating at the different ports. It is the intention also to give the tug owners stock in the consolidation if they desire it, so as to retain interest and representation in the business.

The cash will, however, be paid in preference to stock as there were applications enough, even in confining the list to vessel owners, to provide two or three times over the capital required. It is another case of the promoters of the company meeting with difficulty in distributing the stock to the best advantage. The capital of the new organization is to be \$2,500,000 of preferred and \$2,500,000 of common stock. The preferred stock, which is to pay 7 per cent. is to be fully paid up at \$100 a share but the common stock is to go to the original shareholders at \$10 a share. This will make an actual paid in capital of \$2,750,000. Although the stock list was confined exclusively to vessel owners, the full capital required was subscribed within a day or two after the details of the organization had been worked out, and now there are additional subscriptions from these same owners amounting in some cases to \$50,000 that can not be accepted. The list of principal subscribers includes members of the firm of Pickands, Mather & Co., the Rockefeller interest, M. A. Hanna & Co., Mitchell & Co., W. C. Richardson and others of Cleveland, James Davidson of West Bay City, A. B. Wolvin of Duluth, and also several interests in Buffalo.

W. A. Collier of the Vessel Owners' Towing Co., Cleveland, has been at work on this organization for a long time past. He had the support from the beginning of one of the largest vessel concerns on the lakes. Up to a very short time ago his efforts were far from being satisfactory, but he held on all the time to such of the strings as could be kept together and finally found very easy sailing when the scheme of distributing the stock among the vessel owners, who controlled the patronage of the tugs, was worked out. In this respect the new organization is different to any of the so-called trusts that have been formed of late. Mr. James Hoyt of the law firm of Hoyt, Dustin & Kelley, of Cleveland, who was prominent in the organization of the American Ship Building Co., is also a leading spirit in this consolidation.

HENRY B. PLANT DEAD.

Henry Bradley Plant, president of the Plant system of railroads and owner of the Plant line of steamers, died suddenly at his home in New York on the afternoon of Friday, June 23, aged eighty years. Mr. Plant had been in poor health for some time past, but spent some time at his office on Thursday and was not indeed taken sick until the night following. Mr. Plant was born at Branford, Conn., October 27, 1819, his ancestors being among the earliest settlers of the state. He secured a common school education and then entered the service of an express company operating on the boats between New York and New Haven. Later he was connected with the Adams Express Co. and then went south and secured from President Jefferson Davis of the Confederate States of America the famous concession which enabled him to operate his express business through the lines of the army. His travels in this connection suggested to his observation the possibilities of Florida, and he entered upon the erection of the large hotels at Tampa and elsewhere which have served to develop the state in so great a degree. In 1879 he secured control of the Plant system of railways and steamers, and the system now includes several roads aggregating more than 2,000 miles of track and a number of handsome modern steel vessels. In addition to the conduct of these interests Mr. Plant was also president of the Canadian Atlantic Steamship Co. Mr. Plant's son, Morton F. Plant, is first vice president of the system.

Several times since the consolidation of the lake ship yards it has been reported from West Bay City that Capt. James Davidson was to build a dry dock of 500 feet length and was to put in tools for the construction of steel vessels. There is absolutely nothing in these rumors, at least for the present. Capt. Davidson said only a few days ago that he was entirely undecided as to what he would do regarding either a dock or the much-talked-of tools for steel work.

AMERICAN SHIP BUILDING CO.

Members of the board of control of the American Ship Building Co. met in Cleveland Wednesday, but as far as could be learned there was nothing of special importance taken up. Practically all of the details connected with the transfer of the Wheeler plant of West Bay City to the consolidation have been attended to but as in the case of all the other plants there will be no radical changes at West Bay City for the present. Duties of the heads of departments in the ship yards and docks of Cleveland and Lorain, formerly the Globe Iron Works Co., Cleveland Ship Building Co., and Ship Owners' Dry Dock Co., but now known under the one name, American Ship Building Co., are being quite clearly defined. The Lorain ship yard will continue under the immediate direction of W. W. Watterson, with R. T. Newman in charge of the ship yard and dry docks at Cleveland. O. N. Steele has been appointed superintendent of machinery for all of these works, with A. B. Hambleton in charge of the boiler shops and L. Dickie in charge of foundries and pattern shops. Messrs. Watterson, Steele and Dickie were with the Cleveland Ship Building Co. and Messrs. Newman and Hambleton with the Globe Iron Works Co.

Mr. John Craig of the Craig Ship Building Co., Toledo, happened to be in Cleveland Wednesday while the other ship builders were in the city, but his visit had nothing to do with meeting of the directors of the consolidated companies. "It may be" said Mr. Craig, "that circumstances will draw us into the consolidation later on, but for the present I am not worried on that score. We never built vessels without seeing a new dollar coming in for the old one going out, and if we may be permitted, as we are under present circumstances, to keep a couple of vessels on the stocks we will not reach out for great things or borrow trouble by attempting serious interference with the big organization. The men at the head of the consolidation are broad enough, I think, not to attempt to crush us out by unfair means, but for that matter I know that if occasion required it we could get a few hundred thousand dollars in Cleveland without going farther than the Perry-Payne building. I have been building ships for some thirty-five years—the first one in Maryland in 1864—and I have about reached the point of thinking of a rest, but the boys at Toledo have a future to plan for themselves. They are, however, in possession of a ship yard with a pretty fair reputation and without any debts, and a concern in that condition is usually in better shape to meet competition or to await good times than a new organization or one of heavy indebtedness."

SHALLOW SPOTS NEAR ASHLAND.

In September last Capt. Henry Stone, sailing one of the steamers of the Bessemer fleet, found a shoal spot near Raspberry island in the channel leading into Ashland. The U. S. S. Michigan, making surveys for the hydrographic office, navy department, also located in this vicinity some time previous two shallow spots that were not on the charts. Now Capt. L. W. Stone of the wooden steamer Roumania reports that he struck bottom in the same locality, and he is evidently of the opinion that the spot he found is still another new one, although it seems very close to the obstruction on which Capt. Henry Stone's steamer fetched up. Capt. L. W. Stone gives bearings that would appear sufficiently clear to enable the government officials to locate the spot to which he refers. He says:

"The shoal on which the Roumania struck on the 21st inst. lies nearly four miles N. W. by N. from Raspberry island light-house. The location on the chart is as follows: Draw a line from Sand island light-house to the northern extremity of Bear island; prick just half the distance between these two points and the spot on which we struck will be N. E. from that prick mark and inside of a mile. When this spot is marked I think it will be found very near these bearings. Our time and courses were as follows: From abreast of Raspberry island light-house heading north we steered north for eleven minutes (two miles); then changed to N. W. and ran ten minutes (nearly two miles), to where we struck. These courses (true) would be N. $\frac{1}{2}$ E. and N. W. $\frac{1}{2}$ N. The apparent over-accuracy of the time and courses is not a guess or an after thought, but an effort to go as far as possible from the Bear and Sand island shoals, which the officers of the U. S. S. Michigan found in 1897. Just before we struck I had noted that we passed the range of the north end of Bear island and Sand island light-house and was about to change the course to W. N. W. I do not believe there was less than 17 feet when we struck, and the bottom was probably not rock, although shoals on both sides, which were located by the Michigan in 1897, were rocky."

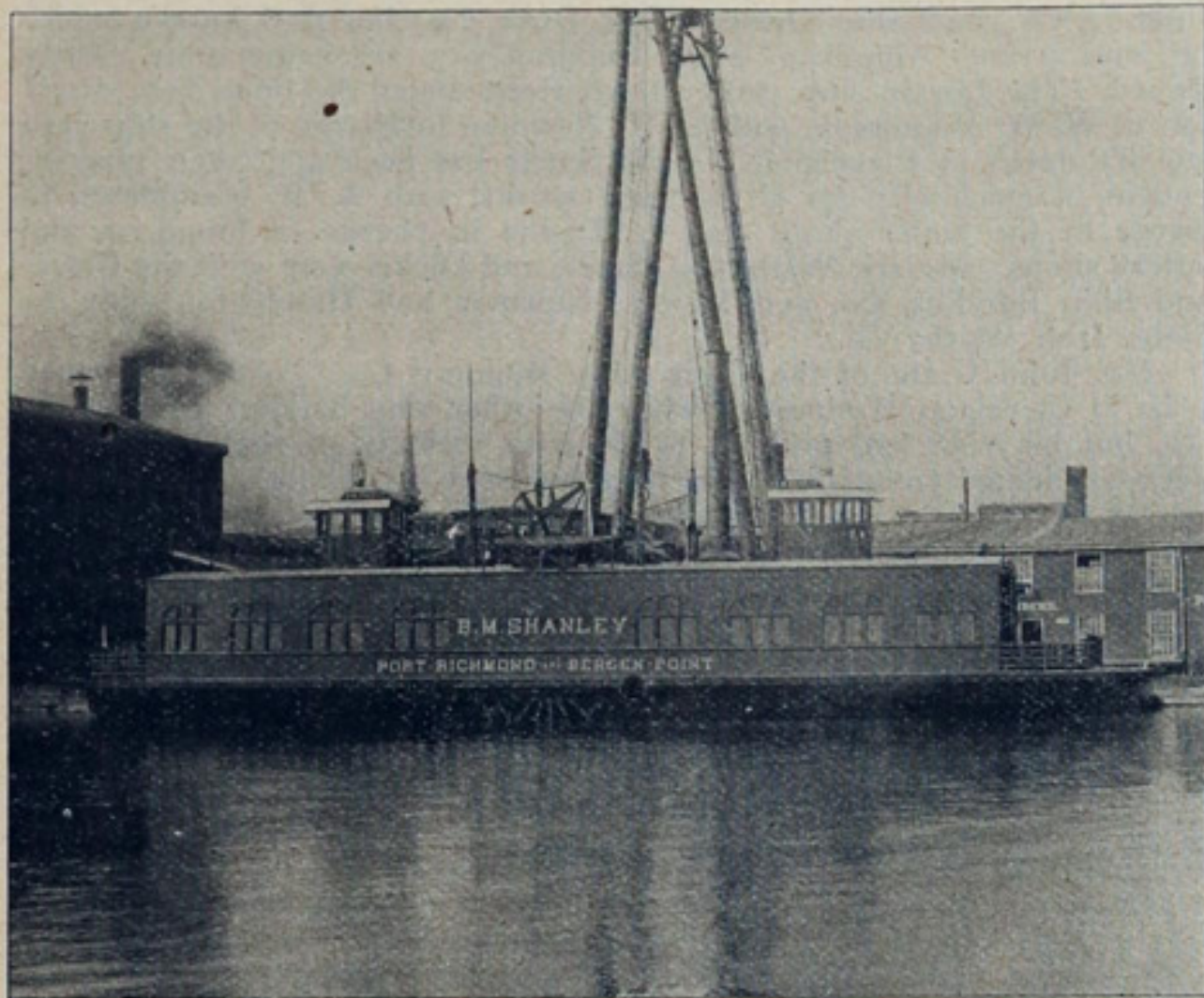
DOLLAR ORE—SHIP OWNERS' HARVEST.

Not long ago it was agreed by all interests on the great lakes that with big ships and deep channels the days of high freights had passed. Dollar ore was to be only a memory. But the freight market today has practically reached the dollar figure. A dollar a ton is said to have been paid on one load that a shipper was forced to move to Buffalo. It is certain anyhow that there are no ships to be had to move ore from the head of the lakes at less than a dollar, and the grain rate from the same quarter is equal to more than a dollar. Probably forty ships have been chartered within the past two days at 40 cents on coal from Ohio ports to the head of Lake Superior, which is just double the rate that prevailed all through last season. These advances are due largely to grain shippers bidding for the vessels. The movement of grain from the northwest would seem to indicate that the farmers are getting rid of it in anticipation of very heavy crops, and vessel men are correspondingly happy.

FERRY BOAT SHANLEY.

HANDSOME SIDE WHEEL CRAFT CONSTRUCTED BY THE PUSEY & JONES CO. OF WILMINGTON, DEL., FOR THE PORT RICHMOND & BERGEN POINT FERRY CO.

The Pusey & Jones Co., Wilmington, Del., one of the oldest ship building concerns of the country, has launched many handsome vessels but none a more elegant as a testimonial of thorough workmanship than the ferry boat B. M. Shanley, just completed for the Port Richmond & Bergen Point Ferry Co. of Port Richmond, N. Y. The Shanley is 140 feet length over guards, 125 feet between perpendiculars, 52 feet beam over guards, 30 feet beam of hull, molded, 9 feet 11 inches depth (base line to top of deck beam amidships), and 9 feet 2 inches depth (base line to top of deck beam at ends). The outside plating is of open hearth steel of about 60,000 pounds tensile strength, and the coal bunkers have a capacity



FERRY BOAT SHANLEY, BUILT BY THE PUSEY & JONES CO., WILMINGTON, DEL.

of 20 tons. The centre house is of steel, and is 58 feet long by 5½ feet wide. There is a cabin on either side of the boat, with hoods at the ends and with pilot houses, etc., on the upper deck. The lower cabin is 84 feet in length. The pilot houses are 11 feet long and 11 feet wide. The boat is fitted with an American jet condensing beam engine with a cylinder of 30 inches diameter and 9 feet stroke. A steel return tubular boiler is of capacity sufficient to furnish 40 pounds working pressure to a 30 inch cylinder cutting off at half stroke. It has 35 feet of grate surface. The boat is equipped with hand steering gear, a full outfit of pumps, an 1,800-gallon water tank, etc. There is steam heat throughout, and the electric lighting outfit consists of seventy-five incandescent lamps. Two metallic life boats, each 18 feet in length, have been fitted.

SHIPPING MEN TO DEWEY.

Admiral Dewey has some very warm friends among the shipping men of the country and a number of them are now at work in the preparation of a novel memorial for presentation to him when he arrives at New York next autumn. The intended gift is a magnificently-gotten-up volume of portfolio size containing several thousand carefully assorted and chronologically arranged articles, editorials, comments and illustrations from the leading newspapers, weekly periodicals and magazines of the country. These articles date from the destruction of the battleship Maine—which really brought on the war with Spain—and day by day will lead up to the Admiral's return to New York. The volume will include all mention of his name and deeds from the comments of a paragrapher to the long editorials and special magazine articles. It will be a radical departure from anything of the kind ever before undertaken. The pages will be of the finest quality of card paper, with gilt edges, and on the margins it is planned to have placed original sketches in colors and in black and white by leading American artists. Several newspapers have offered to donate the originals of Dewey cartoons and sketches, so that the volume will be a combination art portfolio and history that it will be absolutely impossible to duplicate. On the corners of the cover will be scenes in solid silver showing the battle of Manila and the bay of New York. The center of the front cover will probably be occupied by a gold plate with suitable inscription. The first page will be executed in color by an artist and will bear the names of the representative men connected with the maritime interests of the port of New York who are making the presentation. On this page also will be a detail presentation inscription, richly engrossed. Plans have also been made to secure for insertion in the volume brief autograph tributes on Dewey from famous authors, leading editors and statesmen, President McKinley and the members of the cabinet. The funds needed to defray the expense of the preparation of this volume were subscribed in ten days. Mr. Fred. B. Dalzell of the Dalzell Towing & Transportation Co. of New York and Boston is treasurer of the fund.

A fine shaping machine built by Bement, Miles & Co. of Philadelphia has just been installed at the Roach ship yard, Chester, Pa.

BUFFALO'S LABOR PROBLEM--OTHER MATTERS.

Buffalo, June 27.—This port is apparently emerging at last from the cloud of labor complications, under which it has been obscured all the season. The recovery will not be complete this season, for the diversion to other routes will continue as a matter of course, not to mention the timidity of business, which will seek the course presenting the least resistance, just as in merely physical matters. The last strike, that of the freight handlers, has now been isolated pretty thoroughly by the warehouse owners, and with the influx of men, especially on the Lehigh docks, there is not much choice now between declaring it off without any agreement worth mentioning or letting it die out. The line managers have been very patient. They felt that concessions were useless and have let their boats lie here a fortnight without a murmur. The worst of it was that the men had a fairly good case if they had been wise enough to manage it properly, for almost everybody agrees that they are not well paid.

While the scoopers' strike was at its height a month or more ago one of the leading line managers asked me if there was no possibility of a plan that would make strikes so nearly impossible that the immense waste of time and money would be cut down to the smallest. He appeared to think that some genius could study out a remedy for the evil. Well, the state has tried it and has a board of arbitration and mediation that draws a regular salary, but it has so far accomplished nothing of account. When men will strike voluntarily, and by so doing throw up a bonus which certain lake lines offer for continuous service, the case is pretty nearly hopeless. This was done by the Anchor line firemen, merely out of sympathy when they had been receiving extra pay for several seasons for continuous work. High wages has always failed to prevent these disturbances. My notion is that strikes are no more expensive than competition and no more disastrous than over-production, both of which are to be laid at the door of the proprietor class. They are merely more apparent.

The big steamer North Land has just left after losing a trip, the first lapse of the sort, I think, since she came out. They took a load of machinery out of her when she gave up the trip and it is reported from the King Iron Works that the fixing up of the running gear in a week was a feat that has not been equaled in this generation. Details are not to be had and they would be of account to the engineer mostly, but there is an expert who declares that it was a new pattern of automatic lubricator that did the mischief for the most part. It was a great saver of oil, but not of machinery. Everybody will be glad to see the big steamer going again, as she and her alternate have become such an institution on the lakes that they cannot well be spared. They appear to be doing well this season.

There is still much speculation regarding the projected steel plant, and till it is actually under way in a visible form there will be people to wonder if it is bona fide. The projectors now promise to have the company organized this week or early next and as a double assurance of the certainty of developing the plant as soon as it can be done, it may be said that inside reports, which were not intended to be given out, have it that the promoters have been offered double the money they put into it, but they refuse to sell out. Should they do so it is said that the works would not be built. There are men in the undertaking who have never operated on that plan and they are not going to begin now. Another note of much significance is a letter from a steel manufacturer asking for some land on which to build himself a plant. If the company has none for him, will it buy him some on the outside? There was no mention made of the price.

LIGHT IN THE ENGINE ROOM.

J. J. LAMSDON.

When I first worked as an apprentice to the engineering trade, and during the period when I was not sufficiently familiar with the handling of tools to undertake the making of my first pair of calipers, I was a source of constant annoyance to certain of the men in the shop, from the fact that I was constantly borrowing their tools. This habit grew so pronounced that I considered it quite justifiable for me at least to go to men's tool chests and take the tool I wanted, never thinking of the propriety of telling the owner of my appropriation of the tool. Unconsciously I became a machine shop parasite. It is not a very pleasant thing for men to find their tools have disappeared when they come to look for them.

It does seem to me as I visit the engine rooms of various steamers that many of the dark corners to be found in them do in another manner what I did in the shop. I have sometimes thought that those responsible for the placing of auxiliary machinery in some engine rooms have to a great extent overlooked the fact that dark corners are very inconvenient. The number of tools carried in the storeroom is limited, and duplicates are not easily to be had; therefore everything which tends to the retention of them should be considered. It is very disagreeable to workmen to miss their tools every little while by their getting out of the way into these dark holes.

Another reason why light is a very desirable element is the effect it produces upon those who have the care of the engines. Marine engineers are human, and well ventilated and well lighted quarters are as necessary for them as any other class. This matter of procuring good light has been very much neglected. I have been on two steamers of about equal displacement and each carrying about the same amount of machinery in about the same space, yet the difference in the two engine rooms, so far as light and cheerfulness were concerned, was wonderful, and it seemed that the principal reason for this great difference was due primarily to the general lay-out of the auxiliary machinery, which in one case was arranged so as not to cause obstruction to light, while in the other it was placed regardless of the amount of light it might or might not obstruct. Perhaps the matter could also be very much overcome by more general use of light-colored paint on columns and such other parts as are possible rather than the sombre colors now chosen.

Several small strikes were reported last week from Baltimore and Chester, Pa., ship yards but neither developed to a point that would entitle them to serious consideration.

REINA MERCEDES.

THE NAVY'S MOST INTERESTING TROPHY OF THE SPANISH-AMERICAN WAR—
HEAVY EXPENDITURE NECESSARY TO PUT HER IN CONDITION
FOR CRUISING SERVICE.

The picture presented herewith is perhaps the best that has been made of the former Spanish-cruiser Reina Mercedes since her arrival in this country, whence she was brought as soon as temporary repairs could be made after she had been raised at Santiago harbor. That repairs made thus far are entirely of a temporary nature will be understood from the fact that an expenditure of fully \$500,000 will be required to place the vessel in cruising condition. As it will be impossible to devote to this purpose any of the funds available for ordinary repairs to naval vessels, it will be necessary to await a special appropriation from congress for the reconstruction of this ship. The work of raising the Mercedes was one of the most difficult wrecking jobs ever attempted, and the manner in which it was carried out reflected great credit on the Merritt & Chapman Wrecking Co. of New York. Capt. Chittenden was in direct charge of the operations for the navy, although Pres. I. J. Merritt of the New York company went to Santiago and personally superintended the preparation of the

the sunken vessels were pitted and eaten away. For this reason the Cristobal Colon could not have been made into a good warship, even if she had been raised soon after being sunk.

It is worthy of note as exemplifying the possibilities of American automatic tools that extensive use was made during the wrecking operations of the Boyer pneumatic hammers manufactured by the Chicago Pneumatic Tool Co. of Chicago. Boyer drills were also used, and by their use more than 300 holes were drilled under water. There is, of course, no comparison between hand work and the time required for drilling with these machines. The wrecking company was so well pleased with the results that they have arranged to equip all their vessels with pneumatic drills and hammers. Naval Constructor Beliankin of the Russian navy, one of the foreign attaches detailed to watch the wrecking operations at Santiago, was also so favorably impressed with the work of the Boyer tools that he has recommended that every war vessel in the Russian navy be equipped with a full outfit for repairs and other operations.

Eight days and nights were occupied in towing the Reina Mercedes from Santiago to Norfolk, Va. The trip was very tedious but it was thought best to proceed slowly and take every possible precaution, as the contract of the wrecking company with the government provided that if the vessel was delivered safely at Norfolk navy yard they would receive



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Newport News, Va.

FORMER SPANISH CRUISER REINA MERCEDES AS SHE APPEARED UPON ARRIVAL IN THE UNITED STATES.

cruiser for the trip north, on which he accompanied her. The Merritt & Chapman company conducted the wrecking operations on the cruiser Maria Teresa, which was also recovered at Santiago, and although it was through no fault of theirs that the vessel was lost on Cat island while enroute north, President Merritt said he wanted to be on hand in case there arose another such crisis as that which occurred in the case of the Teresa.

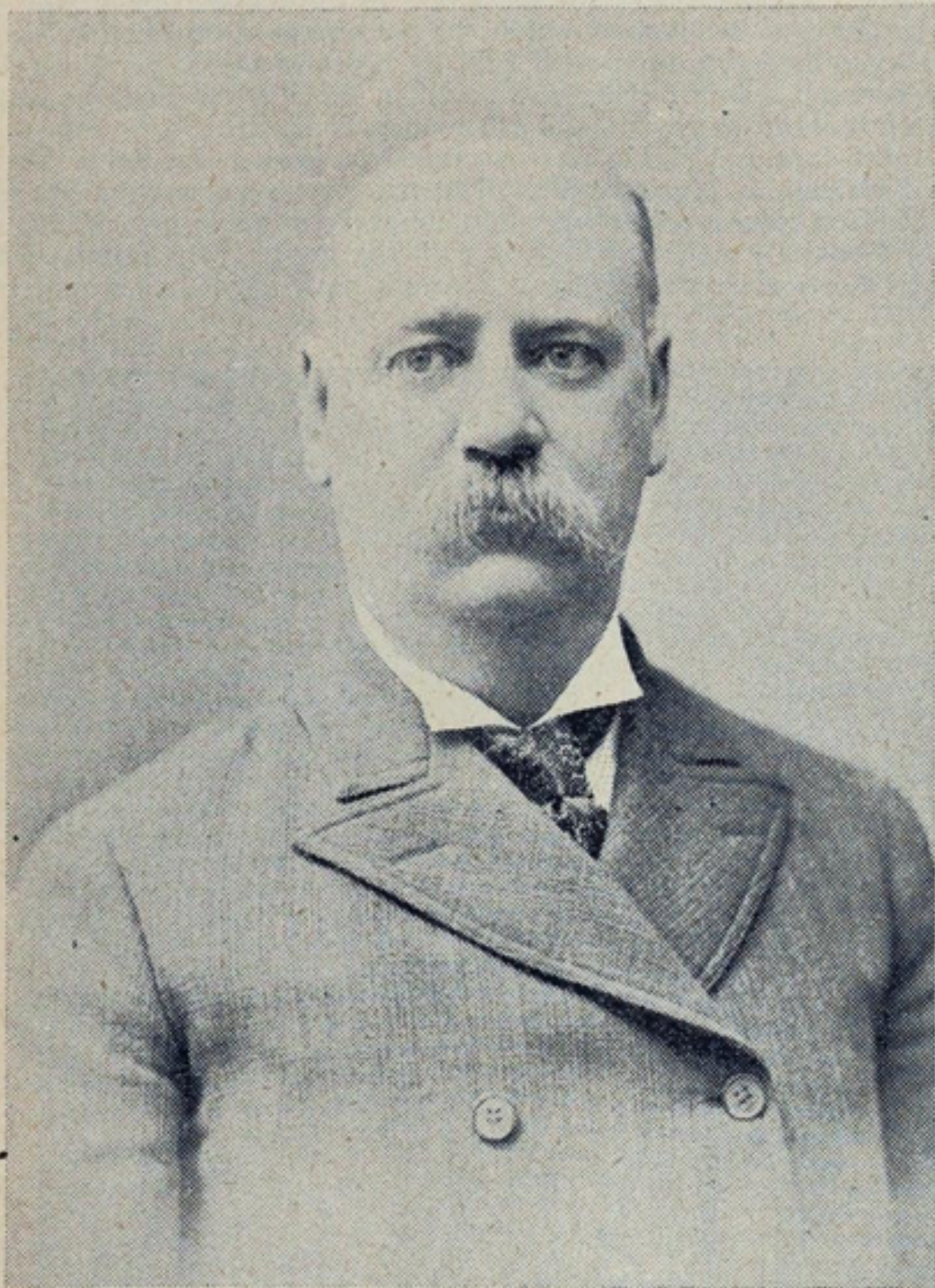
The work of raising the Reina Mercedes was begun Jan. 2, 1898, and on March 1 she was towed into Santiago harbor. She lay on the brink of a ledge with 26 feet of water inshore and 42 feet outshore, with a list of 28 degrees. All the joiner work, including the officers' quarters, was torn out and the wreckers built a cofferdam on the main deck just forward of the bridge. In this dam 30,000 feet of lumber, six tons of bolts and 800 yards of canvas were used. The water-tight dam was pumped out, the vessel rose and was towed into Santiago with 12 feet of water in her hold. She drew on delivery in this country only 22 feet of water. All her guns except two 16-centimeter rifles, were taken off. They were made in Havre in 1886, and when the vessel was raised all were found to be badly rusted, and in one a shell was jammed. The Mercedes was badly battered by the American vessels before she was sunk by the Spaniards, and the wreckers found holes in her so large that they could not be calked with pine corks and accordingly had to be covered with iron plates. President Merritt in speaking of the operations on the vessel said that there is so much lye in the water at Santiago that the machinery and boilers of all

\$75,000, while otherwise they would get nothing. There were twenty-five men aboard the cruiser on her trip up to Norfolk. She leaked some and the pumps were kept going steadily. The Reina Mercedes is a protected cruiser of 3,000 tons displacement and was built at Carthagena in 1887. She was not sent to Havana with the remainder of the Spanish fleet, owing to the condition of her boilers, but was assigned to the defence of the harbor at Santiago. After the final sortie of Cervera's fleet this ship was sunk in the harbor channel, in the hope of preventing the entrance of the American fleet just as Hobson had attempted with the Merrimac to prevent the Spanish fleet from coming out. After the Mercedes has been fitted with new boilers and rebuilt generally at the Norfolk navy yard, she will be to all intents and purposes a sister ship of the six new unprotected cruisers of the Denver class, which were described and illustrated in the last issue of the Review.

It has been decided to give the names Pleiades and Hyades to the two steel "tramp" steamers building for the Boston Towboat Co. by the Maryland Steel Co., Sparrow's Point, Md. The names were selected to conform with those of the other vessels in the company's fleet, most of which bear the names of stars or planets. The new boats will be by no means confined to the coal carrying trade, as it is the intention of the company to employ them in carrying grain or general cargo to the West Indies or Europe whenever opportunity offers. According to present indications the vessels will go into commission in October.

DEATH OF ROBERT H. HEBARD.

Mr. Robert H. Hebard, general manager of the Minneapolis, St. Paul & Buffalo Steamship Co., and agent for the Lake Erie Transportation Co. and other large interests in Buffalo, was found dead in bed at his country home at Derby, N. Y., last Saturday morning, June 24. He spent Friday in the conduct of the regular routine of business at his office in Ellicott Square, Buffalo, and although he complained of not feeling well in the evening it was not supposed that his indisposition was other than of a very temporary nature. Mr. Hebard, who was fifty-two years of age, was a native of Buffalo, having been born in that city May 10, 1847. As a youth



he served in a cavalry regiment near the close of the civil war, and upon his return secured a position in the office of the Western Union Telegraph Co. Later he entered the service of the Union Steamboat Co. and for twenty years from 1870 to 1890 was assistant manager of that corporation under Washington T. Bullard. His connection with the Lake Erie Transportation Co., the lake line of the Wabash Railroad Co., dated from 1887, and in 1892 he was made agent also of the Minneapolis, St. Paul & Buffalo Steamship Co. He was a member of the Merchants' Exchange and one of the most public spirited citizens of Buffalo.

BREAKING RECORDS.

With about 18 feet draught through connecting channels of the great lakes, the big steel ore carriers are again engaged in breaking records. The new Wilson line steamer Henry W. Oliver has just delivered at Cleveland from Ashland a cargo of 7,014 gross tons, including 1 per cent allowance for moisture. This is equal to 7,856 net tons, which is by great odds the largest cargo ever moved by a steamer on the lakes. But it is not quite equal to the cargoes of the large steel tow barges of the Rockefeller fleet. The steel barge Fritz of this fleet, delivered at Conneaut, a few days ago, 7,030 gross tons, which with 1 per cent added for moisture would be just 7,100 gross or 7,952 net tons. The Fritz was towed by the steamer Morse, which carried 6,491 gross tons, so that the two moved together 13,591 gross or 15,232 net tons. This great quantity of ore is moved down the lakes in the Morse and her consort at full 11 miles an hour.

A WARM ENDORSEMENT OF THE BLUE BOOK.

Marine Review Pub. Co.—Gentlemen: The copy of the 1899 edition of "The Blue Book of American Shipping," has been received in perfect condition. An inspection of its contents proves its unquestioned value, and of the research and time that must have been consumed in its compilation. So complete, worthy, and comprehensive a volume should receive the support of the interest it serves, as it carries within its pages so much of value that could be secured in no other way. You should have had a thousand pages of advertisements. Wishing you every measure of financial success, we beg to remain, THE NAUTICAL GAZETTE, New York, June 23, 1899. S. W. Stanton.

Alex. Ross of Somerset, Mass., is reported to have awarded to a Bath, Me., ship building concern a contract for a five-masted 3,500 ton schooner.

Chautauqua lake excursion.—The Nickel Plate road will run excursions to Lake Chautauqua July 7, good returning August 8; and July 28, good returning August 29; special low rates. For further information see agents.

70 July 7.

LAUNCHINGS AT BATH, ME.

The three-masted barge Upton for the Staples Coal Co. of Taunton, Mass., was launched Saturday noon, June 24, from the yard of Kelley, Spear & Co., Bath, Me. The craft was towed to sea the same afternoon. Her measurements are: Length, 184.9 feet; beam, 35 feet; depth, 16.2 feet; gross tonnage, 843; net tonnage, 746. She will be commanded by Capt. John N. Encannaz, of Taunton. She is the eighth barge launched by Kelley, Spear & Co. this year, and four more barges are at present on the stocks.

The three-masted wood barge No. 17, for the Consolidated Coal Co. of Baltimore, was launched Wednesday morning, June 21, from the yard of the New England Co., Bath, Me. This is the eleventh barge built by the New England Co. for the Consolidated Coal Co. Her measurements are: Length, 192.7 feet; beam, 35 feet; depth, 17.4 feet; gross tonnage, 935; net tonnage, 813. She will have a carrying capacity of 1700 tons. This barge has a heavy hard wood bottom with yellow pine ceiling and planking. She has a complete outfit of Hyde Windlass Co. ship machinery. The masts are of spruce, 72 feet long and 16, 17 and 18 inches diameter, respectively. The barge was built under the supervision of Capt. A. B. Mills of the Consolidated Coal Co. She will be commanded by Capt. Joseph Achon of Baltimore. Number Seventeen was towed to Portland, Me., the day of the launch.

CUP DEFENDER COLUMBIA.

THE RECENTLY-COMPLETED RACING CRAFT WHICH EMBODIES THE HIGHEST DEVELOPMENT OF HERRESHOFF DESIGN AND AMERICAN PRACTICE IN YACHT CONSTRUCTION.

The Columbia, recently completed by the Herreshoff Manufacturing Co. of Bristol, R. I., seems to have already proven her superiority over the Defender of America's cup fame in the international races of 1897, and she may therefore be looked upon as representing the highest development of American ideas in the construction of wind-propelled racing craft. This yacht, which is to contest in October next with Sir Thomas Lipton's Shamrock, contains many features of design that will prove interesting and instructive to builders of sail and steam craft alike. She is 131 feet over all but only 90 feet on the water line; beam 24 feet 2 inches and draught under 20 feet. At the lowest frame the yacht is 45 feet in depth and from the planksheer to the bottom of the keels the depth is 24 feet. The keel plate, stem and stern posts are of cast bronze, her frames and deck beams of nickel steel and her plating of bronze up to the water line and nickel steel above. In model the vessel is a nearer approach to an out and-out fin keel type than her predecessor. The lead keel is shorter and deeper. The lead keel of the new boat is almost 30 feet long, as against 35 feet length in the Defender. At the heel it is 6 feet in depth, while forward, just before the bottom line turns upward, it is 7 feet 6 inches. From the heel forward the bottom of the keel is flat for about 20 feet. The top of the keel is on a straight line but is fully a foot and a half higher forward than aft. The keel's bottom is parallel with the water line. At about a third of its length from the forward end the lead keel is 20 inches in width at the top. The widest part of the keel is close to the bottom below the widest portion on top and a thickness of 34 inches is here attained. The keel might indeed be described as a plate rather than a bulb with a width at the upper edge of 20 inches and at the lower of 3 inches. The Columbia's rudder is well underneath and will run to the bottom of the lead. The round of the rudder post fits in a groove molded in the after end of the lead.

The construction of the new yacht is along the line of lighter plating than the Defender and there is considerable variation in the sizes of the frames and deck beams. They are heaviest amidships and grow smaller toward the ends of the vessel. The keel plate of cast bronze is half an inch in thickness and the flanges on the edge have a height of 4 inches. Cross webs of similar height are on the plate at intervals of 20 inches, and to these the floors and frames are riveted. For the sake of convenience the plate was cast in three sections and both ends of the inner section and the inner ends of the outer sections have flanges 2½ inches deep on the bottom, and alike to the upper flanges these are riveted together making the plate practically solid. In length it is 30 feet with a depth of 4½ inches and a width of 20 inches at the widest point, tapering to a point forward and to a width of 4 inches aft. The plate lies close to the lead for its entire length, slots having been cut across the top of the lead keel to admit the lower flanges where the sections are joined. The fastening of the keel to the plate is made by bronze screws 9½ inches in length by 1 inch diameter. To insure the keel being kept in place the lower stake of plating drops on the side of the keel 2 feet aft and 3½ feet forward, being fastened by screws. The plate and lead are even on their outside surfaces.

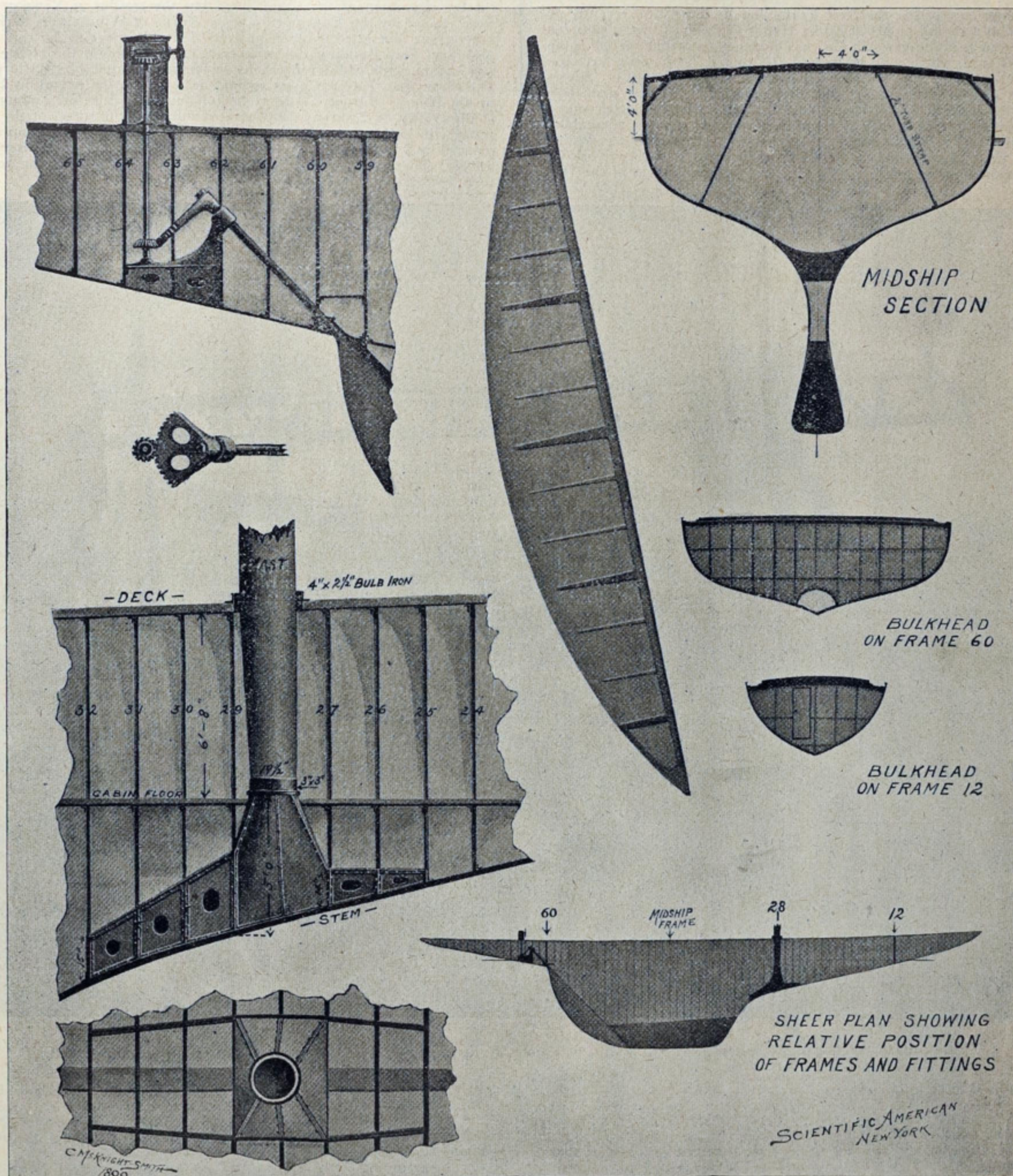
The post and frame of the rudder are of cast bronze and are covered with bronze. The stem and post are riveted to the keel plate. The stern post drops 2 feet below the top of the lead and is received by an offset in the lead. The deck beams, which have a rise of 8 inches in the center, are fastened to the frames by a single rivet, but are braced to them by a nickel steel plate 7 inches wide, set 2 feet in on the beam, 2 feet down on the frame and held with three rivets at each end. To provide for extra strength at a point of excessive strain the beams close to the mast have riveted to them web plates of nickel steel 9 inches in depth. At the turn of the bilge on either side is a stringer or keelson in the form of a nickel bulbed angle 3 by 2 inches in size. Two stringers of similar size and shape are located under the deck beams, and diagonal struts or braces extend from bilge stringer to deck stringer. The deck is strapped above the deck beams with diagonal nickel steel strappings. The cabin floor beams are of yellow pine, bolted to steel brackets on the frames. The mast is 107½ feet in length and 22 inches in diameter at the hounds.

The steel deck stringer or waterway plate runs the entire length of the boat, the width amidships being 20 inches. Along its inner edge is a gutter bar, a steel angle with the flange turned outward and riveted to the plate. A steel bulbed angle is riveted to the outer edge of the plate, the longer flange and its bulb making the only rail carried by the vessel.

Strength of construction is contributed by the flange forming the rail being flush on the outside with the frames and the top strake of the plating being lapped up to within an inch of the top and riveted there. The scupper thus provided on either side is drained by three small scupper holes well aft at the lowest point of the sheer.

Very naturally the interest of ship builders in the Columbia will, to a great extent, revolve around the innovations which the Herreshoffs can always be depended upon to embody in every craft which they construct. The principal one of these in the present instance is the new steering gear

To sum up these features of construction, it appears that the Columbia constitutes an improvement on the Defender without a departure from the ideas embodied in that vessel. She has a steel mast, boom and gaff, and her development of greater speed than her predecessor as a cup defender must be attributed largely to achievements in more power and the provision of a larger sail plan. Stress is laid upon the improvement of the lead keel, and the displacement of aluminum by nickel steel for deck beams and topside plating is significant, but little of import attaches to the substitution of Tobin for manganese bronze for under water plating.



THE LINES AND CONSTRUCTION OF THE YACHT COLUMBIA, DESIGNED AND BUILT BY THE HERRESHOFFS AS A CUP DEFENDER.

which shows an increase of power and a saving of weight. How much has been accomplished in this line may be imagined when it is stated that it is possible to swing the Columbia's rudder with one hand. The whole weight of the rudder is borne by a casting through which the rudder post passes just below the quadrant and which is bolted to a horizontal plate supported on the floors and braced by vertical plates below. The rudder is made of bronze plates riveted on frames and from a thickness of 4 inches at the rudder post tapers to 2 inches at the outside edge. Its width at the widest point is 4 feet 1 inch.

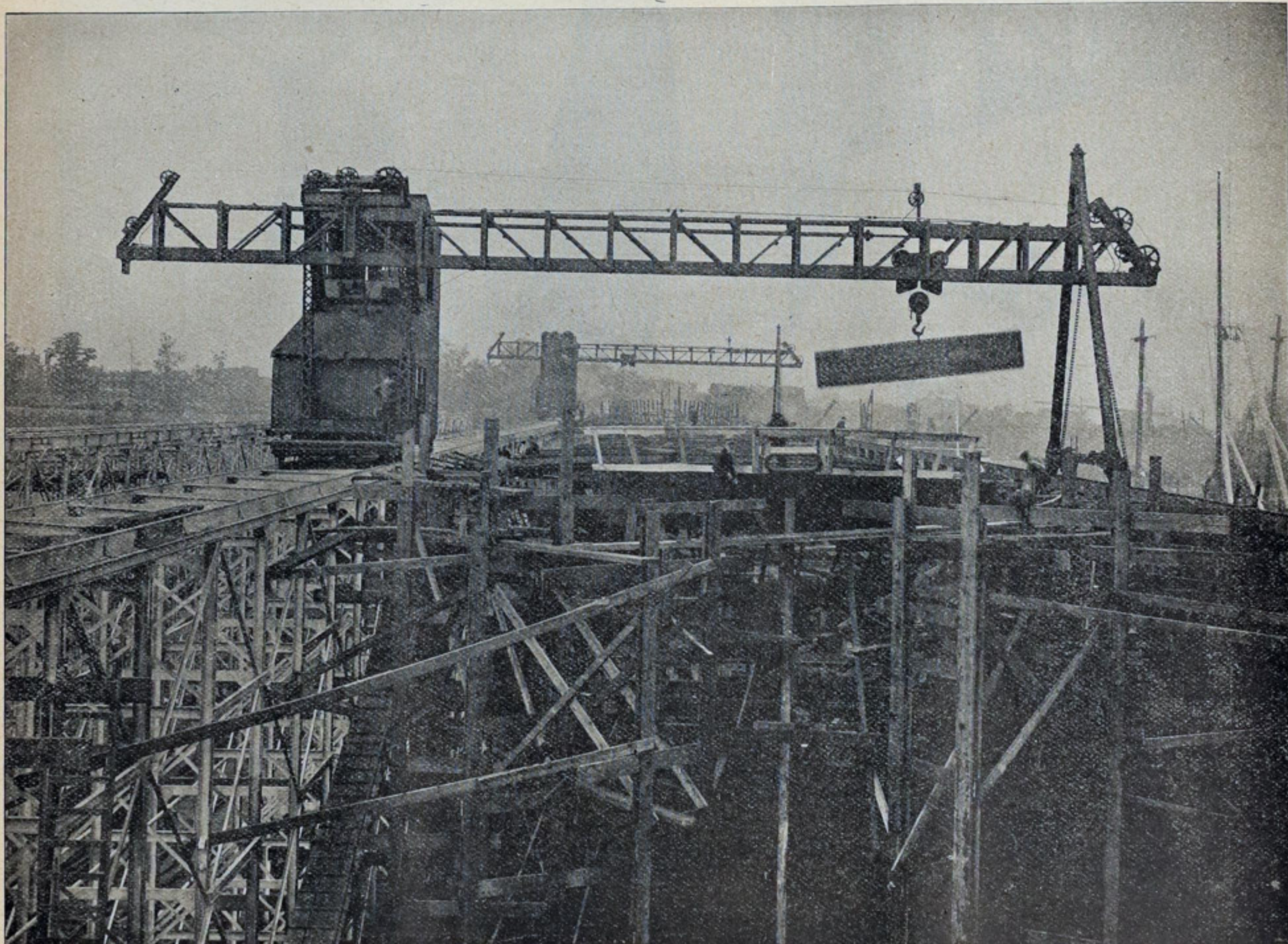
It has been said that the change from Tobin to manganese bronze in 1895, was made simply because it was desired to utilize newer and smoother rolls and a reversal of conditions may have actuated the present action. Certainly the Ansonia Brass & Copper Co. of Ansonia, Conn., have done a very creditable job in the manufacture of the plates for the new vessel. The bronze plating is 7-40-inch in thickness and the steel 1-8-inch. The Columbia undoubtedly presents a gain in the distribution of weight. The center of displacement of the hull proper is raised while the center of gravity of the lead is lower.

SHIP YARD TOOLS.

LARGE ORDERS FOR CRANES AND HEAVY MACHINERY TO MEET REQUIREMENTS OF NEW PLANTS AND IMPROVEMENTS IN SEVERAL OF THE ESTABLISHED YARDS.

Builders of hoisting and conveying machinery and the manufacturers of metal working tools are profiting by the establishment of several new ship yards and by improvements that are being made generally in works of this kind throughout the country. It is announced that the latest of the ship building enterprises, the New York Ship Building Co., recently organized with a capital of \$3,000,000 by Henry G. Morse, former president of the Harlan & Hollingsworth Co., has begun negotiations for the equipment of its yard, which is to be located at Camden, N. J., on a stretch of water front acquired from the Camden Land & Improvement Co. Several tools of a general character for the engine works of the new plant have already been ordered, and it is said that the equipment in electric cranes and appliances generally will be equal in power and general adaptability to anything as yet put in use in this country. One order to William Sellers & Co. of Philadelphia is for a 150-ton riveter. The New York Co. is also considering the question of taking over the equipment of the Hill-

cranes erected at the yard of the Newport News Ship Building & Dry Dock Co. at Newport News, Va. Of the five cranes at Newport News three are of this type and electrically operated. The length of tramway is a trifle over 187 feet. The trolley will attain any speed desired on the tramway, while the speed of the crane on the track amounts to 750 feet a minute with 9,000 pounds 89 feet from center, or 690 feet with 28,000 pounds 55 feet from center. The clear height under boom at the lower end of the yard is 100 feet. The first crane of this type installed at Newport News was mounted upon a wooden trestle but steel has been utilized for the two just completed. The Brown company erected the steel trestle for the new crane at the Cramp yard but the trestles at Newport News were erected by the Edgemore Bridge Works of Wilmington, Del. The other crane illustrated is representative of a type in use at the yard of the American Ship Building Co. at Lorain, O. It combines the bridge tramway feature with cantilever extension, and is operated by electric power. The clear span between piers is 58½ feet; cantilever extension beyond trestle, 14 feet; capacity 7 tons. The hoisting speed is 30 feet a minute, that of the trolley on tramway 250 feet a minute, and the travel of the entire crane with load on pier tracks 300 to 400 feet a minute. The span can be reduced by 2 feet units by moving in the single pier and track on which it travels. There are three longitudinal tracks—two on a trestle on one side



ELECTRIC GANTRY SHIP BUILDING CRANE (7 TONS, 58 FEET SPAN) AT WORKS OF AMERICAN SHIP BUILDING CO., LORAIN.

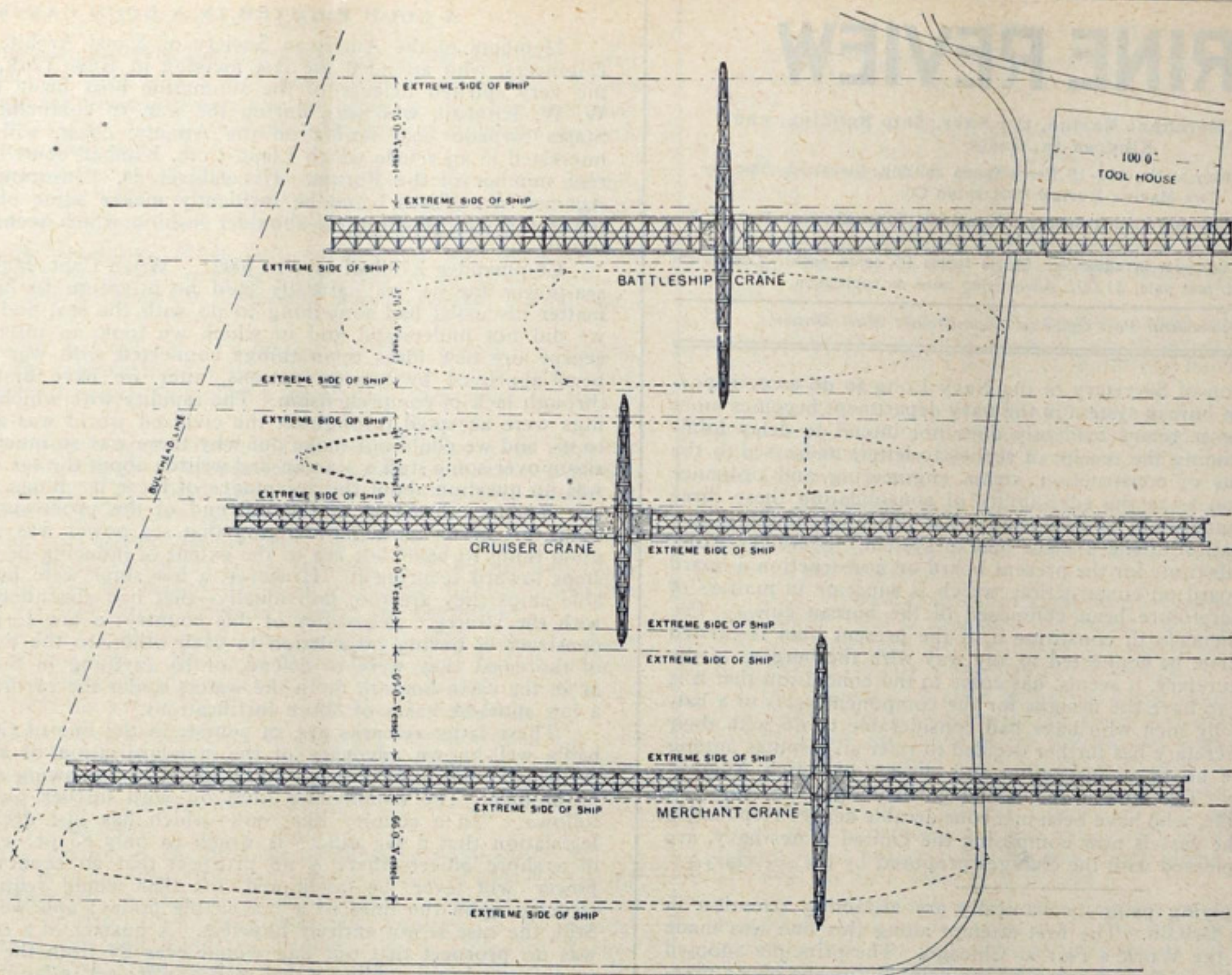
man Ship & Engine Co. of Philadelphia, now in the hands of an assignee.

The Brown Hoisting & Conveying Machine Co. of Cleveland, which builds all manner of specially designed cranes for ship yards, has recently added to its list of orders in this line a contract from Vickers' Sons & Maxim of England. This order is for four balanced cantilevers of the ship building kind. Two of these cranes will be mounted on the recently patented Brown steel truss, while the remaining two will be placed on the ground. The Brown company has also received from the Austrian government a contract for a ship building crane to be erected at the government yards at Trieste, Austria. Of the Brown company's contracts in this country, the greatest degree of interest probably attaches to a crane for work on two battleships building at the yard of the Cramps in Philadelphia and to two other similar devices that will soon be in operation at the same yard. The battleship crane is mounted on the form of steel trestle heretofore mentioned. It has a clear travel of 725 feet up and down the trestle and a lifting capacity of 15 tons at 60 feet or 5 tons at 95 feet on either arm.

The illustrations presented herewith show two of the most approved types of cranes manufactured by the Brown company with special reference to ship building needs. The one represents the last of five cantilever

of the ship berth and one on a trestle on the other side, upon which the entire crane travels. The mechanism for traveling, hoisting and trolleying is in the house carried on the double pier at the end of the bridge. The electric motor is carried upon the same bed plate with patent band friction drums for hoisting, bridge traveling and trolley traveling.

The crane just completed at the Cramp yard and referred to above is termed "the battleship crane" by reason of the fact that it is located between the ways occupied by the United States battleship Maine and the Russian battleship Retvizan—the latter the largest man-of-war ever constructed in America. This crane will, by reason of its location, be employed continuously in carrying material to battleships under construction. The two other cranes now under construction by the Brown company for the Cramps will be termed the "cruiser" and "merchant ship" cranes. The specifications for the three cranes show some points of variance in each. The battleship crane has a track that measures 547 feet. The cantilever is 202 feet and the maximum load of 12½ tons can be carried 60 feet either side of the center line of the trestle. From the lower chord of the cantilever to the ground is 92½ feet. The track of the cruiser crane is 582 feet in length, the cantilever is 143 feet in length and the distance from the ground 85 feet. The merchant ship crane is 95 feet



SIDE ELEVATION OF THE THREE TRESTLES AT THE CRAMP SHIP YARD.

in height and 664 feet in length, and has a cantilever 168 feet in length, upon which a load of 10 tons can be carried 46 feet each side of the center and of 3 tons 78 feet each side. The efficiency of the battleship crane was demonstrated recently in handling the stern post of the Russian battle-

ship. The sternpost, which weighs almost 14 tons, was carried the entire length of the ways and set in position in twenty-one minutes. This crane is driven by a single electric motor of about 150 horse power, built by the Elwell Parker Electric Co. of Cleveland.



CANTILEVER CRANE RECENTLY ERECTED AT THE NEWPORT NEWS SHIP YARD BY THE BROWN HOISTING & CONVEYING MACHINE CO. OF CLEVELAND.

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The determination of Secretary of the Navy Long to do away if possible with the present bureau system in the navy department becomes more apparent daily. The secretary evidently does not intend to delay fulfillment of his plans pending the receipt of replies to letters addressed to the chiefs of the bureaus of construction, steam engineering and ordnance requesting an opinion as to the advisability of consolidating these three bureaus. The announcement is now made that "as a preliminary step toward the simplification of the present bureau system," Secretary Long has determined to substitute for the present board on construction a board of admirals. The board on construction, which is supreme in matters of naval design, has heretofore been composed of the bureau chiefs. The admirals, who will henceforth constitute it, if the present plan is carried out, will not, of course, be connected in any way with the bureaus of the department. The secretary, it seems, has come to the conclusion that it is a trifle incongruous to have the designs for the component parts of a battleship passed upon by men who have had considerable to do with their formulation. The secretary has further decided to refer all disputes among bureau chiefs to the board of inspection and survey, of which Admiral Schley is a member. The bureau chiefs, and particularly Rear Admirals Hichborn and Melville, who have been in a considerable degree responsible for the designs of the vessels now composing the United States navy, are naturally not at all pleased with the changes proposed by the secretary.

Devices for applying paint mechanically are attracting attention in ship yards of Great Britain. The first attempt along this line was made on the buildings of the World's Fair at Chicago. The principle adopted in the English devices is that of spraying the paint by means of air pressure, and it is in many respects identical with the various liquid fuel sprays which have the similar object of subdividing liquid fuel into minute particles under air pressure. Experiments have proven that paint so sprayed can be applied with greater uniformity and rapidity than with brushes. The system moreover has the advantage of applying the paint uniformly over the roughest and most unequal surfaces, a task which was both difficult and laborious when performed with brushes. Finally paint can be applied to any desired thickness, whether it be mixed thinly or thickly. Experiments with such a device in painting ship's bottoms are to be made in some of the English yards, and it is claimed that not only will economy of time and labor result from the new practice, but a remedy will be provided for the proverbial wastefulness of the class of workmen ordinarily engaged on work of this kind. One of the leading London technical journals remarks in this connection that inasmuch as England has of late been somewhat backward in comparison with the United States and Germany in adopting new inventions, it is hoped that this new system will at once achieve a practical success.

There are many grains of truth in a recent letter from a marine engineer who says that expressions of admiration and gratitude frequently accorded to captains of vessels that come safely through storms could very often be accorded with far more justice to the members of the engine-room force. Certainly the men who work day and night without food or sleep to repair the damage done by heavy seas are fully entitled to their share of the applause. On a recent trip of a freight steamer sailing from the port of New York the engineers worked all one night inserting a steam jet below deck in a funnel. There was only a brief respite and then the engineers had another thirty-six hours of severe work without eating or sleeping. These occurrences are not unusual but the spirit manifested is assuredly worthy of most complimentary recognition.

The time may come again when small wooden vessels on the great lakes will be as cheap as ham sandwiches, as M. A. Bradley of Cleveland said they were not long ago, but no matter how great the depression it is certain that the next fellow from New York who tries to buy up or charter a fleet of them will have to offer nothing less than government bonds as security. The owners of a few of these vessels chartered or sold on deferred payments to the Manhattan Steamship Co. of New York for service between New York city and Portland, Me., were met with the cool announcement, a few days ago, that the affairs of this company had reached a point where a sheriff's sale of its office effects was under way but was stopped by an injunction granted on the application of other creditors.

Prospective purchasers of vessels which were in use as auxiliaries to the United States navy during the Spanish-American war and may be offered for sale by the department have been warned during the past week to investigate where such vessels were built before concluding any purchases. There is an impression in some quarters that vessels, even if built abroad, would acquire a national character by reason of their employment by the United States navy, but this, according to recent interpretations of the law, is not true.

A summary of wrecks and casualties during April just issued by the Bureau Veritas places the losses for the month at thirty-two steamers and seventy-two sailing vessels.

A GOOD FIGHTER IN A GOOD CAUSE.

Members of the American Society of Naval Architects and Marine Engineers, who attended the last meeting in New York, and remember the very spirited defense of the submarine boat made by Lieut. Com. W. W. Kimball, who was, during the war, in command of the United States torpedo boat flotilla on the Atlantic coast, will be very much interested in an article which Lieut. Com. Kimball contributes to the current number of the Forum. His subject is, "Insurance of Property Against War Risks," and he incidentally makes some observations in a refreshing straight-from-the-shoulder fashion which seems to be characteristic.

Commander Kimball says in part: "When Capt. Mahan first defined sea-power for us, we naturally paid no attention to him, because the matter discussed had something to do with the sea, and was one which we did not understand and in which we took no interest. We never accept any new ideas upon things connected with war until they have been approved by foreign nations, after we have first rejected them through lack of comprehension. The rapidity with which Mahan's teachings were accepted throughout the civilized world was a difficult puzzle to us, and we could not make out why there was so much foreign enthusiasm over some stuff a seaman had written about the sea. But, since there was no question about the acceptance of these teachings abroad we, after our manner, closed in at the tail end of the procession, and accepted them too, as far as acknowledging that sea power was sea power and a good thing to have, but not to the extent of inducing us to take any real steps toward securing it. However, a few ships were built—very creditable ships they are too, individually—that had absolutely no connection with the strategic necessities of this country; a few torpedo boats were constructed, having no relation to each other, to the existing condition of the coast they were to defend, or to anything in the heavens above or in the earth beneath or in the waters under the earth; and there were a few sporadic cases of shore fortifications."

These latter remarks are, of course, in the line of Commander Kimball's well-known advocacy of the standardization of all torpedo craft, for which endorsement seems to be found in a growing sentiment among naval men. The commander goes on with further playful sarcasm as follows: "In a country like ours—which has just decided by national legislation that a sea officer is worth to only 85 per cent of the value of a shore officer—there is no prospect that an economical use of sea power will ever be attempted, for that would require a fleet constructed upon the lines of a reasonable policy; and we have no policy. Still, the case is not entirely hopeless. A quarter of a century ago there was no prospect that our flag would ever fly from the staff of a vessel even remotely resembling a real man-o'-war; yet today it is flying aboard several ships that no country need be ashamed of."

The author's favorite theme, however, is the torpedo boat, surface and submarine, and he gets back to it finally in the following observations: "As has been stated, we have built a few torpedo boats. We are building a few more, apparently not for service, but for the purpose of giving contracts and practice to our boat builders; since the boats are of all shapes and sizes, and the few completed ones are not being used to develop a torpedo boat service or, in fact, for any purpose whatever. But really we have a good excuse. We were very much frightened last summer by three Spanish torpedo craft; but when Spanish lack of enterprise prevented their use against us, and when, moreover, the Spaniards took a couple of them out in daylight, in face of the fire of a strong fleet, to certain destruction, and even then made no attempt to utilize their real power of attack, we were so relieved that our joy took the form of assuring ourselves that we had not been scared at all; that torpedo boats were useless; that we would never use ours again, and that there were no good torpedo boats in the world."

"Our normal composure will be regained after a time; and then we shall be in a condition to accept the well known fact that three fairly well handled torpedo boats can, on a moonless night, force the best battleship in the world off her blockading station, or put her hors de combat. We may even appreciate the fact that submarine torpedo boats furnish more insurance against our losses per dollar expended in insurance than any other form of defence at present known. This proposition might be highly absurd, if it included any idea that we should take the lead in developing a new kind of war material; but it does not. France is already providing herself with submarine boats; and it would seem possible that we might at once copy her instead of waiting till all the rest of the world had adopted the idea, especially as we have already gone through our usual preliminary process of rejecting this war device—a device developed in our own country by private enterprise, and one of great value to a country situated like our own in regard to the necessities of coast defense. Fifteen years ago a private citizen of this country led the world in successful submarine boat designing and experience. It was clear that the development of submarine torpedo boats presented fewer difficulties than did that of surface torpedo boats. It was clear, too, that we had it in our power to take advantage of the great change in naval methods that must follow the appearance of submarine boats—to lead the world, in fact, for our economical advantage, instead of following, and paying the cost of our slowness."

"The submarine boat idea was fumbled with a bit and then practically dropped, just as was the magazine gun idea a third of a century ago. Meanwhile France, appreciating what submarines meant to her, and failing to get good results along her experimental line of development, seized on the general principles of the American design, declared in her leading technical journal that it was the first submarine boat constructed on rational data, and applied its principles, so far as they were publicly known, to the submarine flotilla she was then constructing. The more valuable and practicable features of the American design are still held in this country, and it will be amusing to observe whether we utilize them or not. It will be interesting to note whether we accept the device that can most economically strengthen our weak defences and give us most war insurance at least cost, or whether, being still joined to our idols of indifference, we let it alone."

The package freight steamer Buffalo, building for the Western Transit Co. at Buffalo, will be launched August 1.

AROUND THE GREAT LAKES.

Capt. Welcome, recently appointed manager of the Erie and Buffalo passenger line, has resigned and will take charge of the steamer Tampa.

In a single day recently twenty-five ore laden vessels entered the harbor of Ashtabula, O. All the unloading machinery on docks was certainly kept busy that day.

The launch at the yard of the Chicago Ship Building Co. recently of the barge Manila, building for the Minnesota Steamship Co., marked the completion of the first vessel riveted entirely by pneumatic tools.

Citizens of Houghton, Mich., will present the new Bessemer line steamer Douglas Houghton, nearing completion at the Globe works of the American Ship Building Co., Cleveland, with an elegant United States flag.

The Hausler & Lutz Co. of Chicago has been awarded a \$500,000 contract for the construction of the inshore section of the new break-water at South Chicago. Completion of work by December 1, 1901, is required.

Secretary Alger's announcement that Major Clinton B. Sears of Duluth, who is in charge of harbor improvements on Lake Superior, is not to be transferred to Porto Rico, will be received with thanks by everybody connected with lake shipping.

One of the best known lumber tows on the lakes, consisting of the steamer C. F. Curtis, the barges N. C. Holland, T. S. Fassett and Isabel Reed, has been sold by Nelson Holland of Buffalo to the Tonawanda Iron & Steel Co. and will hereafter be used in the ore trade.

Another of the big ore carriers has reached the 6500-gross-ton mark. The Mitchell steamer M. A. Hanna of Cleveland has just moved on about 18 feet draught 6.562 gross (1 per cent added to bill of lading weight for moisture) or 7,349 net tons of ore from Escanaba to Ashtabula.

Rumor has it that the Graham & Morton Transportation Co. will increase its fleet by the construction of a 450-foot steamer to cost \$500,000, and to be fitted out on the general plan of the Atlantic coast steamer Puritan. They would be a long time getting such a boat in the present condition of the ship yards.

A company known as the Raddatz Submarine Engineering Co. of Milwaukee, has been incorporated with a capital stock of \$100,000 for the purpose of exploiting the Raddatz Submarine boat. Officers of the corporation are: President, B. T. Leuzarder; vice president, L. W. Bunde; general manager, Richard Raddatz; secretary, M. J. Gillen of Racine, Wis.; treasurer, W. H. Upmeyer.

From April 24 to June 15 there was received for marine delivery service on the Detroit river from the main office 47,703 pieces of mail and from passing boats 13,999 pieces. Within that time ninety-three telegrams were received from boats and 100 telegrams were delivered. Only two boats out of a total of 4,554 were missed. In a single day 1,563 pieces of mail were delivered to 136 boats.

There is no truth in the rumor from Chicago that the five steel steamers of the Menominee fleet, which are under charter to the Canada Atlantic company, operating between Chicago and Parry Sound, Ont., have been sold by M. A. Hanna & Co. of Cleveland, who control them, to the Canada company. A sale of the vessels has been considered on two or three occasions but the negotiations are off, at least for the present. The charter expires with the close of the present season.

G. H. Breyman & Bros. of Toledo, will be awarded the contract for harbor dredging at Buffalo, their bid being $8\frac{1}{4}$ cents per cubic yard, while that of Carlin, Stickney & Cram of Detroit, the second lowest bidders, was $15\frac{1}{2}$ cents per cubic foot. The total of the Breyman bid for the entire 400,000 yards is \$15,000 less than the estimate of Maj. Symonds, the United States engineer at Buffalo, and the bid is unquestionably the lowest ever offered for lake work of this character. The lowest bid heretofore received for Buffalo dredging was 17 cents.

SHIP YARD ORDERS AND IMPROVEMENTS.

Mr. Robert Moran of the Moran Bros. Co., Seattle, Wash., writes the Review that in his belief the Moran plant will be, within a short time, one of the most complete on the Pacific coast, taking into consideration the large and modern saw mill now under construction, which will give excellent facilities for wooden vessel building of every description. The Moran plant now covers more than 14 acres within the city limits of Seattle and has a frontage of over 700 feet on the harbor.

A late rumor afloat in shipping circles is to the effect that the Harlan & Hollingsworth Co. of Wilmington, Del., may receive a contract for three more vessels for the Merchants' & Miners' Transportation Co. of Baltimore.

The steam yacht Columbia, building for Mr. Harvey Ladew at Lewis Nixon's Crescent Ship Yard, Elizabethport, N. J., has been successfully launched. The Columbia is equipped with a complete outfit of Blake pumps.

The Pusey & Jones Co., Wilmington, Del., is building the engines for the steamers Ponce and San Juan, which the Harlan & Hollingsworth Co. of Wilmington are building for the Porto Rico Steamship Co.

The Jackson & Sharp Co., Wilmington, Del., has secured from the National Dredging Co. a contract for the construction of a large tug, which will be fitted with compound surface-condensing engines.

The city clerk of Northampton, Mass., is receiving bids for the construction of a ferryboat for use on the Connecticut river.

Work has commenced on the new vessels for which George Currier & Son of Newburyport, Mass., have the contract.

Tourist Excursions.—From June 24 to July 10, inclusive, the Nickel Plate road will sell special tourist tickets to Denver, Colorado Springs, Pueblo and Utah points. Through palace sleepers and unexcelled dining car service via the Nickel Plate road. Special low rates. Ask agents Nickel Plate road for particulars. 68 July 10.

ITEMS OF INTEREST.

A shipment of exhaust machinery to the value of more than \$3,500 was recently made by B. F. Sturtevant & Co. of Boston to Buenos Ayres.

Frank Moore, who is connected with Westinghouse interests at Pittsburgh, is at the head of the Pittsburgh Machine Tool Co., recently organized with a capital of \$50,000. All kinds of machine tools will be manufactured.

A gem in the printing line announces the removal of the office of the eastern passenger agent of the Plant system, Mr. J. J. Farnsworth, to the ground floor of the Dun building, 290 Broadway, corner of Reade street, New York City.

It is reported from Pittsburgh that several sales of ship plate for next year's delivery have been made at present prices, which are in the neighborhood of $2\frac{1}{2}$ cents a pound, or more than double the prices of eight or ten months ago.

The Shoenberger Steel Co. of Pittsburg has just furnished 250 tons of boiler plate steel to the Portland Railway & Steamship Co. of Portland, Ore., for use on the steamer Lewiston, which will ply between Portland and Japanese ports.

It is estimated that ninety days' time and an expenditure of \$600,000 will be required for the overhauling of the cruiser Buffalo at the Brooklyn navy yard. Among other improvements contemplated is the enlargement of the magazines.

Capt. W. S. McManus, who has been for some time past identified with the Chester Tube & Pipe Mill of Chester, Pa., is at the head of a syndicate that will undertake the erection at Chester of a large plate mill designed to regularly employ more than 500 workmen.

The Elizabeth Marine Ways has been awarded the contract for the new towboat to be constructed for Jones & Laughlins of Pittsburg, mention of which was made in the Review last week. The boat will be 135 feet long, 24 feet beam and 4 feet depth of hold.

Business men have petitioned the Jersey City street and water board of Jersey City, N. J., for the redemption of South Cove, it being represented that a corporation stands ready to lease the property in question, if it be put in proper condition, and to transform it into a ship basin that will rival the Erie basin in Brooklyn.

The international maritime conference to be held in London next month will take up the subject of laws relating to the liability of ship owners, which was gone over at some length at Antwerp last year. The question is one of importance to both shippers and underwriters, and the meeting is likely to be well attended.

The Newport News Ship Building & Dry Dock Co. has placed a contract with the Carnegie Steel Co. for 1,000 tons of very heavy boiler plate. The greatest tensile strength of this kind of plate has heretofore been 60,000 pounds, whereas this will be 61,000 pounds. This material is for boilers of the two steamers for the Pacific Mail Steamship Co.

Models of some of the principal vessels in the United States navy, which were displayed at the Omaha, Atlanta and Nashville expositions, and which are now on exhibition in the corridors of the navy department at Washington, will be sent to the Paris exposition. Among the models selected for exhibition are those of the Maine, Oregon and Olympia.

The Warren line steamer Norseman, which was wrecked on the Marblehead rocks, off the coast of Massachusetts, some time ago, and later was towed to Boston, was sold recently to A. V. Kaiser & Co. of Philadelphia, dealers in old metal, for \$17,250. The Norseman was estimated to be worth \$100,000 when she went on the rocks, and over \$20,000 was expended in efforts to save her.

Officers of the William R. Trigg Co., Richmond, Va., announce that the company will assuredly submit bids on at least two of the six cruisers for which specifications have recently been completed by the navy department. Secretary of the navy Long, who recently visited the Trigg company's plant, manifested surprise at the progress that had been made toward the establishment of a completely-equipped ship yard, as well as the general activity of the place.

Bids have been opened for the construction of the new dry dock at the Mare island navy yard, Cal. The lowest bidder was Dennis Jordan, San Francisco, \$697,579. The other bidders were: Atlantic Gulf Power Co., New York, \$729,000; the California Bridge & Construction Co., San Francisco, \$766,300; Henry Liffetts Co., San Francisco, \$809,120; Campbell & Pelters, San Francisco, \$767,898; Dendon Bridge & Construction Co., San Francisco, \$937,376; Butler, Ryan & Co., St. Paul, Minn., \$798,000.

The department of publicity and promotion of the National Export Exposition, Philadelphia, of which Mr. Hal P. Denton is chief, has just issued an elaborately illustrated booklet descriptive of the undertaking. The illuminated cover is a most artistic piece of color printing. The exposition, which opens Sept. 14 and closes Nov. 30, is designed to promote the advancement of American manufactures and the extension of the export trade and it is going to prove a far more pretentious undertaking than most people imagine.

Bids will be opened by the navy department, July 19, for the sale of six vessels purchased by the government for auxiliary service during the war with Spain. The vessels and their respective appraised values are as follows: Vulcan, \$100,000; Niagara, \$60,000; ferry boat Governor Russell, \$35,000; ferry boat East Boston, \$30,000; yacht Enquirer, \$20,000; Scipio, \$25,000. The Niagara was purchased from the Ward line for \$200,000; the Vulcan, formerly Chatham, from the Merchants' & Miners' line for \$350,000; the Governor Russell and East Boston from the city of Boston for \$71,000 and \$57,500 respectively; the Scipio from George P. Walford for \$85,769, and the Enquirer from W. J. Conners for \$80,000.

Nickel Plate road excursion to California account of National Educational Association convention at Los Angeles, Cal.—Tickets on sale June 24 to July 7. One fare, plus two dollars, for the round trip. Ask agents of the Nickel Plate road for particulars. 44, July 6.

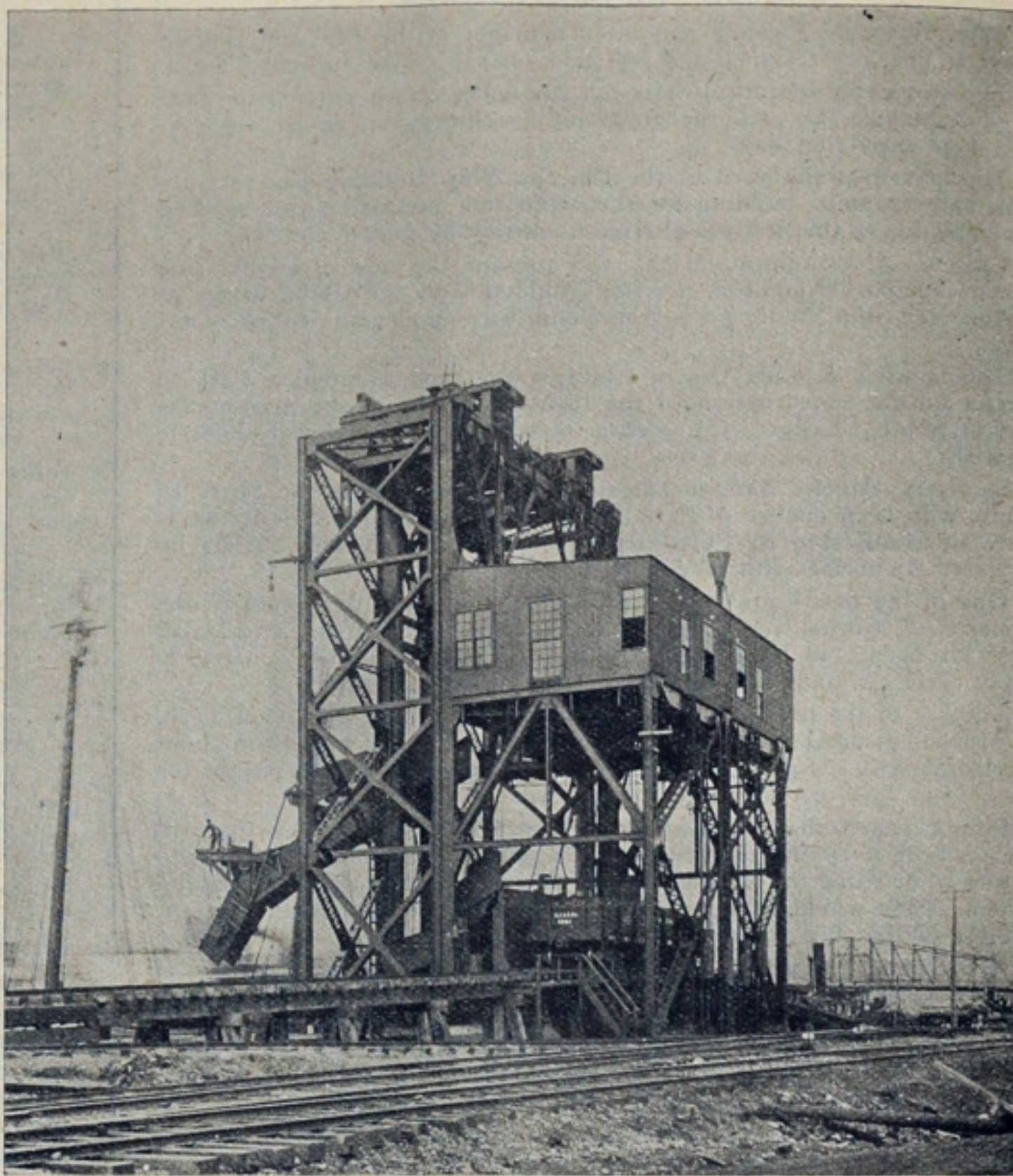
LATEST TYPE OF CAR DUMPER.

DESCRIPTION OF A MC MYLER MACHINE FOR THE RAPID TRANSFER OF SOFT COAL FROM CARS TO VESSELS, RECENTLY ERECTED ON THE LORAIN DOCKS OF THE CLEVELAND, LORAIN & WHEELING RAILROAD.

The machine that takes up and dumps into the hold of a vessel a railway freight car containing some twenty-five tons of bituminous coal is not new among the various kinds of cargo-handling devices that are to be found on the great lakes, but alike to other dock machinery the car dumpers have been undergoing changes and improvements that are a constant source of interest even to the men to whom observation of operation comes as a matter of daily association. In the Review of last week different types of machines (some of them of the very latest design) for the transfer of iron ore from the large freight carriers of the lakes to docks and to railway cars at the Carnegie docks, Conneaut, O., were described at considerable length. Incidentally it was said that the equipment at Conneaut included a car dumping machine built by the McMyler Manufacturing Co. of Cleveland, which machine was guaranteed to transfer fifteen cars of coal per hour to vessels and for which a record of nearly double that number of cars was claimed in actual operation when the circumstances were especially favorable.

Illustrations are presented herewith of the latest type of the McMyler machine, a car dumper recently erected on the docks of the Cleveland, Lorain & Wheeling Railroad Co. at Lorain, O. The Lorain machine is said to be capable of handling a car a minute. This rapidity of operation cannot, of course, be maintained, if for no other reason than the fact that it would be a physical impossibility for the men in a vessel's hold to distribute the coal and keep the hatch clear for the receipt of the loads that would follow. Actual timing, has, however, demonstrated that the whole operation—raising the loaded pan to the top of the tower, discharging its contents, lowering pan, receiving contents of waiting car, returning to normal position, and displacement of empty car by a loaded one—can be gone through with in less than sixty seconds.

The distinguishing feature of this machine, aside from the simplicity of its design, is the perfection of the system for handling and delivering the coal without breakage. This will be made clear by reference to the accompanying illustrations. Fig. 1 shows the dumper in perspective, while No. 2 depicts the loaded car in position, with the pan, also loaded, at its rest point. Fig. 3 shows the pan elevated to the top of the tower and discharging contents into the chute which leads direct to the vessel's hold, while No. 4 illustrates the manner of loading the pan from the car, really of course the initial operation. Cars to be unloaded by this machine are run into a siding with some grade. After a car is uncoupled it moves slowly to a point over a "puller," which hauls it into position under



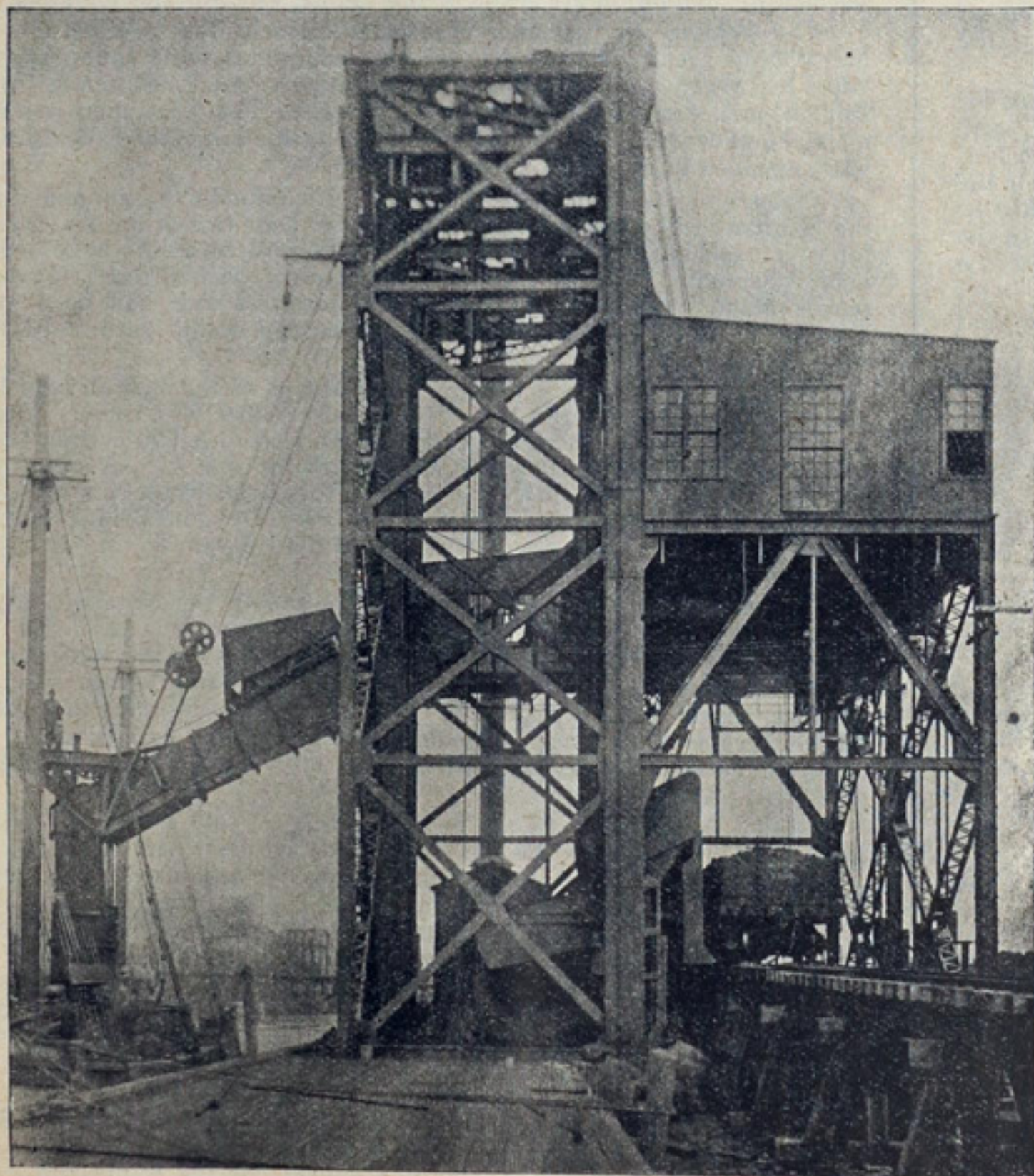
McMyler Car Dumper—Fig. 1.

the machine. A simple movement of the lever causes both car and pan to tilt toward each other and the coal slides gradually from car to pan. The loaded pan, by the movement of another lever, is hoisted to the top of the tower, a grate in the bottom of the pan opening and allowing the coal to slide into and down the chute into the vessel. Meanwhile the empty car has, of course, been pushed out of the way by a loaded one, which is thus ready to be emptied into the pan when it returns. It will be observed that the inventor has retained in this new form of dumper his plan of reducing to a minimum the breakage of coal by, on the one hand, tipping car and pan simultaneously so that the movement of coal is a gradual one, and on the other providing for an equally easy transference to the vessel by means of a chute with telescopic end, which may readily be adjusted to the hold of any vessel. The most noticeable improvement in the machine at Lorain is found in the fact that the backward movement of the loaded pan is so adjusted as to permit of the car from which it has just been loaded being turned completely bottom side up, so that every vestige of the contents may be discharged. The car is held to the track by heavy chains. Not only is every movement of coal during its entire period of transference a sliding one, but every movement of the mechanism is positive and every strain is in the direction of resistance. Add to this the simplicity of the character of the entire plant, and it may readily be understood that there is every likelihood that it will enable the lowering in a material degree of all coal handling records.

MINNESOTA IRON CO. ANNUAL MEETING.

Annual meetings of the Minnesota Iron Co. and the Duluth & Iron Range Railroad Co. were held a few days ago at Duluth. The only changes in the directory of officials were those by which A. R. Flower succeeds R. P. Flower, deceased, and E. J. Buffington, president of the Illinois Steel Co., replaces Marshal Field, whose term expired. Directors and officers of the Minnesota Iron Co. are: Directors—G. S. Brewster, H. H. Porter, A. R. Flower, H. M. Flagler, D. O. Mills and Henry Siebert of New York; E. J. Buffington, M. J. Carpenter, C. P. Coffin, C. W. Hilliard, of Chicago; E. W. Winter, of St. Paul; D. H. Bacon, J. L. Greatsinger, of Duluth. Officers—D. H. Bacon of Duluth, president; Henry Siebert of New York, vice president; C. P. Coffin of Chicago, secretary and treasurer; Thomas Murray, assistant secretary and treasurer.

Directors and officers of the Duluth and Iron Range Railroad Co. are: Directors—D. O. Mills, H. M. Flagler, C. W. Hilliard, A. R. Flower, H. H. Porter, G. S. Brewster of New York; D. H. Bacon and J. L. Greatsinger of Duluth; E. W. Winter of St. Paul; M. J. Carpenter, C. P. Coffin, J. H. Chandler of Chicago. Officers—J. L. Greatsinger of Duluth, president; C. W. Hilliard of New York, vice president, secretary and treasurer.



McMyler Car Dumper—Fig. 2.

THE NEW ARGONAUT.

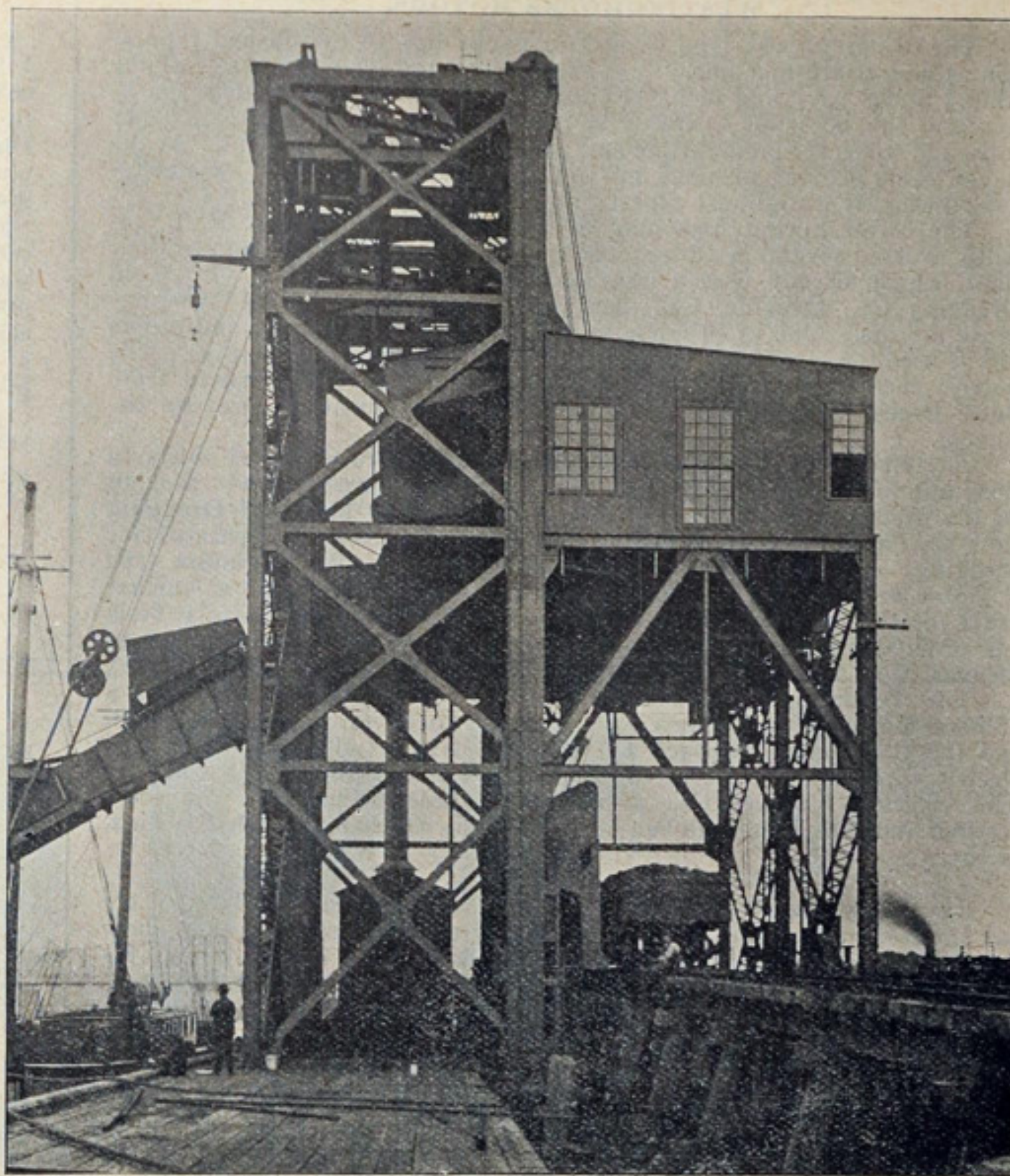
RADICAL CHANGES EMBODIED BY SIMON LAKE OF BALTIMORE IN HIS NEW SUBMARINE BOAT SOON TO BE LAUNCHED.

Some weeks ago the Baltimore correspondent of the Marine Review made mention of the fact the submarine boat Argonaut had been taken to the Erie Basin, Brooklyn, N. Y., for the purpose of undergoing enlargement and transformation in accordance with the latest views of its inventor, Simon Lake. The old Argonaut had ascended and descended in all depths of water over a hundred times, had moved over a thousand miles under water and was regarded by a number of engineers as the only practicable form of submarine vessel. This theory is heartily concurred in by a writer in the current number of Lippincott's magazine, who prefaces a description of the new Argonaut with the assertion that Lake has been successful because he has been the only inventor of a submarine boat who has not striven to construct a mechanical fish. It is further asserted that the United States government has rejected several submarine boats and that France and other countries hesitate to put their pet craft to a practical test in deep rough water simply because of the impossibility of maintaining trim and equilibrium with them, a few ounces of extra ballast being, it is claimed, sufficient to send many of these vessels to the bottom.

Simon Lake has in his new boat, or rather reconstructed boat, which is soon to be launched, made a radical departure from all accepted theories. One of these is the supposition heretofore prevalent that a submarine vessel must partake in some degree of the form of a cigar or fish. The Baltimore inventor has set these traditions at variance by placing a small yacht hull on top of the cylindrical steel hull of the original Argonaut. The points in its favor, as proven by experiments, were increase of stability and speed and also deck room for the crew when the vessel was on the surface. The upper or yacht section of the new Argonaut will be 66 feet in length. Seen on the surface the boat will have the appearance of a mastless steam yacht, with a turret rising from the center of the deck, while the appearance in dry dock will be that of a small gunboat of deep draught.

Essentially the Argonaut will be transferred from the torpedo to the yacht class by this provision of a conning tower, in which the steersman and owner may stand in bad weather, a windlass and collision bowsprit. Only two of the five compartments are to be devoted to machinery, and the gasoline and compressed air reservoirs are in the yacht hull, entirely outside the submarine boat hull proper. The cabin is 10 by 20 feet in size, there is a galley fitted with electric ranges and an operating room which will accommodate four men with ease. She will have a complete telephone system and search lights of 60,000 candle power. A valuable contrivance on the new boat will be a sand pump, which pumps up and throws to a distance sand or coal or any other solids held in water, and which is of course designed for use in wrecking operations, which constitutes one of the primal uses of the Argonaut.

The interesting feature of all discussion regarding the Argonaut is found in the fact that all the men connected with its construction and operation not only disclaim any desire to provide a boat for naval work but heartily concur in the English opinion that the submarine torpedo boat is impracticable, for the reason that it would destroy itself as well as the hostile war vessel attacked. In verification of this belief, they point to the fact on one occasion when the Argonaut was submerged in Hampton Roads a mine was exploded, and although it was more than a mile



McMyler Car Dumper—Fig. 3.

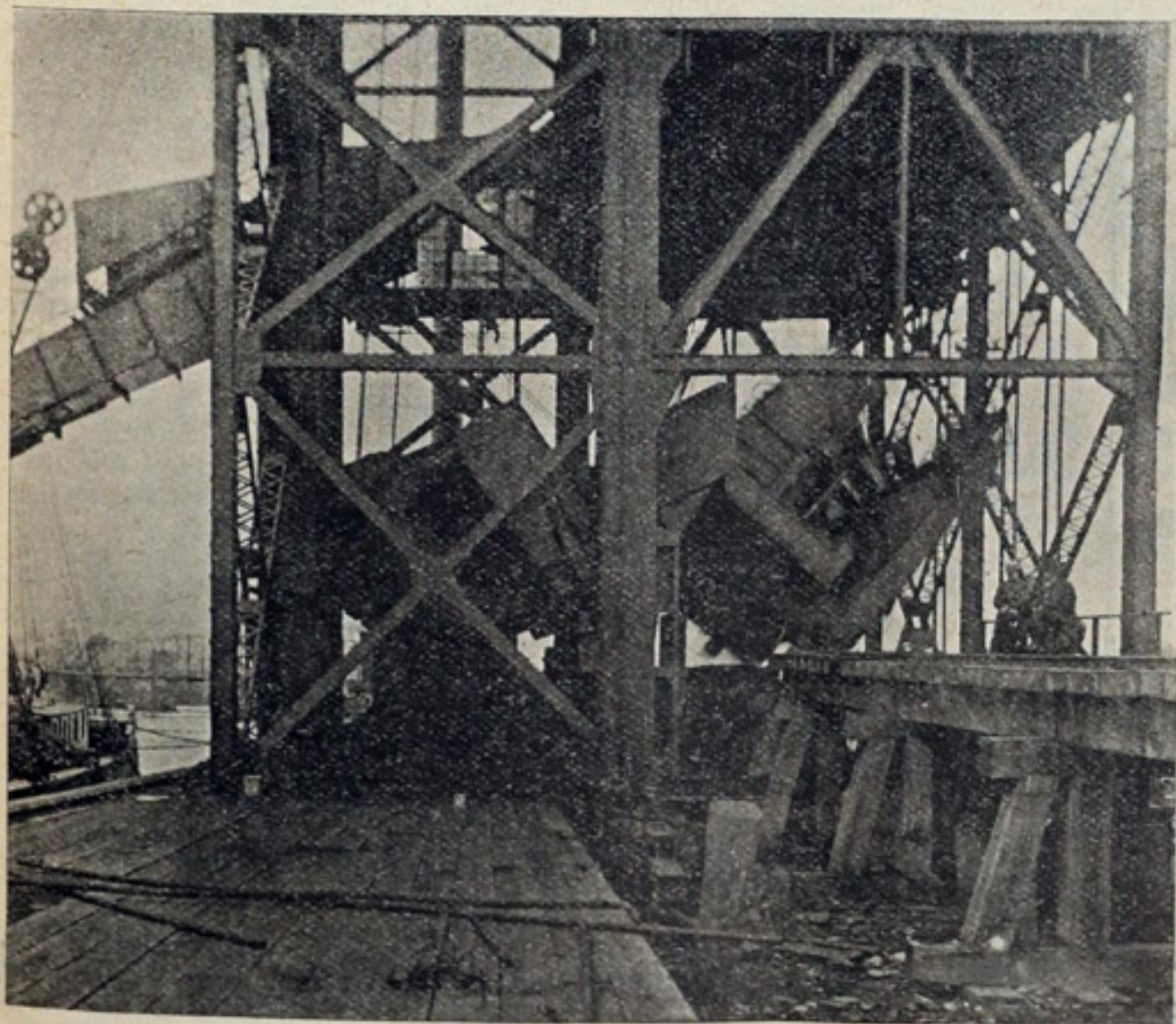
away the concussion was severely felt by those on board the submarine boat and proved the most unpleasant experience to which any member of the crew had ever been subjected.

NEW SHIPS NOT FOR THE FOREIGN TRADE.

There was sent out from the office of the Marine Review and published in newspapers generally throughout the country during the past two weeks a review of marine and naval affairs for the year—a reprint of an introduction to the Blue Book of American Shipping. Such a review necessarily contained extended reference to the crowded condition of ship yards throughout the country and to the prosperous outlook in these yards as regards the construction of vessels for home trade. Unfortunately this matter was utilized by certain newspapers to assert that legislation for the encouragement of our shipping in the foreign trade was unnecessary. The fact that our ship yards for the time being, are unusually busy, was taken by these newspapers to prove that no legislation is needed for the upbuilding of our shipping in the foreign trade. It was certainly not the intention in putting forth these extracts from the Blue Book to discredit, or to justify anyone else in honestly discrediting, the efforts that are being made to secure legislative aid for the encouragement of our shipping in the foreign carrying trade. The new merchant ships referred to are all for coastwise trade, in which there is no foreign interference. Everybody in shipping circles who has a knowledge of the situation understood what was meant and will endorse the statement that legislation on the lines of the bill introduced in congress last winter by Senator Hanna is an essential pre-requisite to any permanent or effective improvement in the condition of our shipping in the foreign trade.

INTERNATIONAL YACHT RACES.

Mr. George L. Norton of the Marine Journal, New York, announces that arrangements have been made with the management of the Plant System, steamship department, through and in connection with Vice-president and Manager M. F. Plant, to run the magnificent steamship La Grande Duchesse to the international yacht races, beginning Oct. 3. La Grande Duchesse is a 5,000-ton steel, twin-screw steamship, with double bottom, steel houses and decks, two of which are clear fore and aft, affording a splendid opportunity for a promenade and a view of the races. This ship has ample stateroom accommodations, elaborately furnished, with a telephone in each room. The dining saloons are handsomely appointed and will seat 125 at table. A first-class caterer will be provided, also a brass and string band. La Grande Duchesse will run on the Canada & Atlantic Plant Line between Boston, Halifax and Charlottetown during the summer, making her last trip from Boston Sept. 23, after which she will be hauled off and got ready for the races. Staterooms will be reserved and passage booked upon application to the Marine Journal, 17 State street, New York.



McMyler Car Dumper—Fig. 4.

WESTINGHOUSE MOTORS.

The Westinghouse type C electric motor has an established reputation as a standard machine. It is employed extensively in vessels of the United States navy and in naval yards. This motor is absolutely sparkless, and can be safely operated in powder mills, grain elevators, paper mills, and wherever inflammable and explosive material is present. At the Indian Head proving grounds and in the government factories for smokeless powder, Westinghouse type C motors are largely used.

The Silver Spring Bleaching & Dyeing Co., Providence, R. I., recently ordered several Westinghouse type C motors as an addition to their plant, which already uses a considerable number. The Kia Ora Gold Dredging Co., Oroville, Cal., has also ordered a number of Westinghouse motors. One of 50 horse power will operate a dredger and others will be used for centrifugal pumps and for rocking the washing trays. The electric current to operate the motors at Oroville is transmitted from Butte Creek, twenty-three miles distant. Water turbines generate the current.

The Bed Rock Dredging Co., Boise, Idaho, are extensive users of Westinghouse electric apparatus, for generating current, and carrying on the dredging and gold washing processes. The Marigold Dredging Co. are also largely utilizing Westinghouse electric apparatus for dredging. A 75-horse-power and a 50-horse-power Westinghouse type C motor are employed to operate dredgers and pumps, and a further order for several additional motors was received recently. Nicola Tesla has ordered a small Westinghouse type C motor to be dispatched to Denver, Col., for use in his laboratory.

The Telluride Power Transmission Co., Colorado, has ordered a 75-horse-power Westinghouse type C motor to operate part of its plant, and the Continental Tobacco Co. has added to recent large orders for electric apparatus five more type C motors for its Danville, Va., factory. The American Tobacco Co., already using these motors, has contracted for four more to be dispatched at once to the Durham, North Carolina, factory.

The Snow Steam Pump Works, Buffalo, (International Pump Co.) has about completed the outfit of pumps for the Russian war vessels now building at the Cramp ship yards. Work has started on the pumps for the new Maine, also building at the Philadelphia yard. The Snow company is furnishing these ships with complete pumping outfits, including air pumps, main and auxiliary feed pumps, water, fire, bilge, sanitary, distilled water, ice machine and oil pumps. The Cramps are furnishing the castings which are of United States standard gun metal.

Extensive improvements have lately been made in the plant of the Vulcan Iron Works, Toledo. The shop facilities have been largely increased. This firm is at present engaged in making some especially valuable improvements in their steam shovels.

The Queen City Engineering Co., Buffalo, has booked quite a large number of orders for steerers from the eastern coast.

Photographers! Bring your cameras and attend the annual convention of the Photographers Association at Celeron, N. Y., July 17 to 22. One fare for round trip via the Nickel Plate road. Your choice of a peerless trio of fast express trains daily. Ask agents. 72, July 17.

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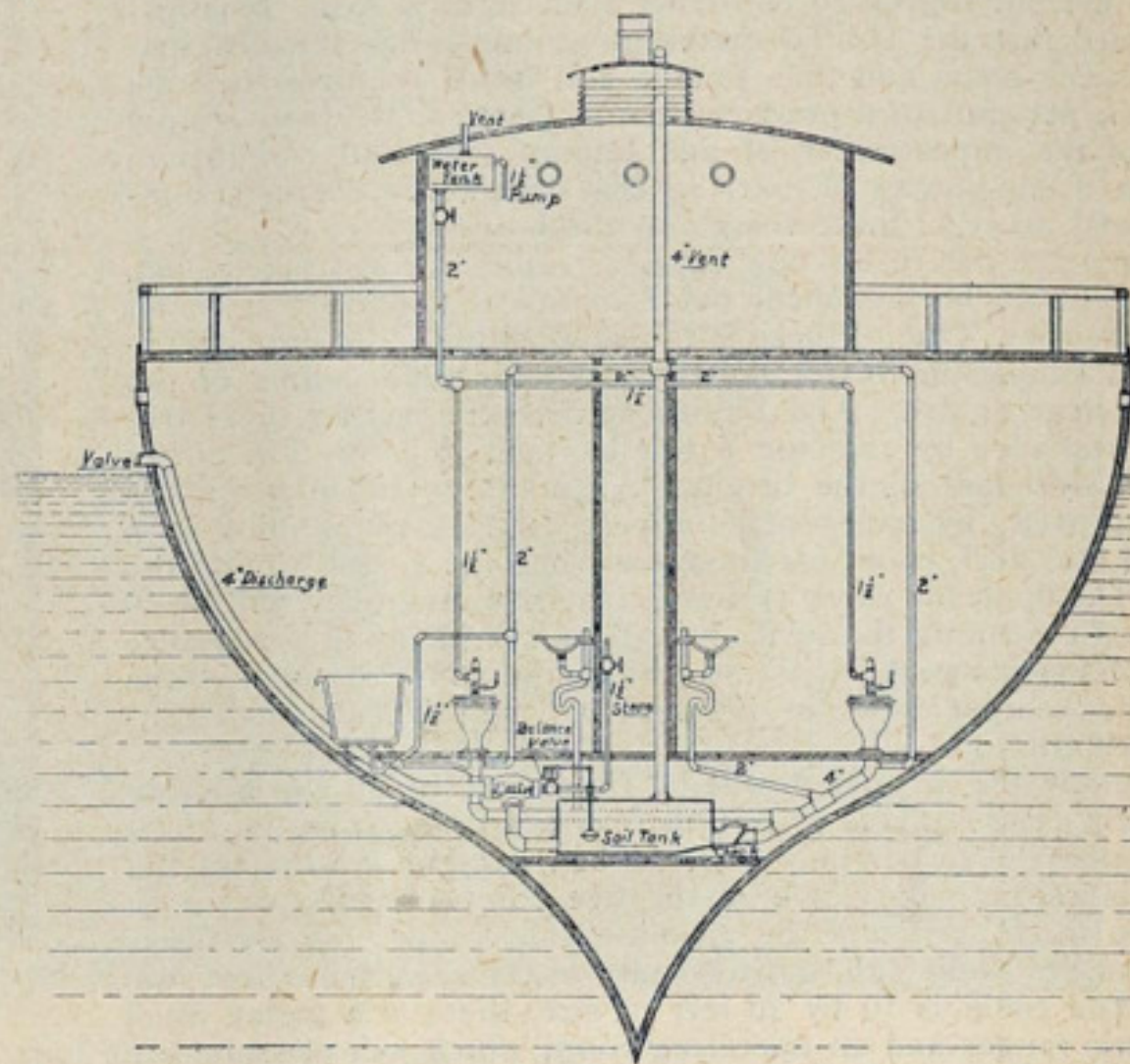
MARINE REVIEW...

Perry-Payne Bldg., CLEVELAND, O.

KENNEY FLUSHOMETERS ON STEAM YACHT NEAIRA.

The engraving shows a system of plumbing, employing the Kenney Flushometer made by the Kenney Co., 72 Trinity Place, New York, used in equipping the new steam yacht Neaira, belonging to Commodore Chas. A. Gould of the American Yacht Club. This system of plumbing has attracted considerable attention and favorable comment from expert plumbers, sanitary engineers and others, and is applicable to all low free-board vessels.

The supply is obtained from pump pressure through a 1½-inch pipe carried to a water tank, which is vented in order to prevent its becoming water bound. From this tank a 2-inch vertical pipe is carried down to a point just below the decks and is there branched into 1½-inch pipes for each water closet. Waste from the water closet is connected with that of the baths and sinks and carried through a check valve into a soil tank in the hold of the vessel. This tank is 2 x 3 x 6 feet in size and has a capacity of over 200 gallons. The vents are carried by a 4-inch pipe and ventilation is through the smoke stack of the vessel, which consumes all gases and odors. The check valve at the point where the waste pipes



CROSS SECTION—KENNEY FLUSHOMETER SYSTEM ON STEAM YACHT NEAIRA.

connect with the soil tank serves as an effectual barrier against back pressure and the entrance of waste water from the soil tank due to the rolling of the yacht.

From the steam pump a 1½-inch steam pipe is carried to a balance valve, which is operated by a float in the soil tank. As the tank fills, the steam valve is opened, starting an action which draws all of the contents of the soil tank to an ejector having a 4-inch inlet and outlet, which discharges the sewage through a sea valve just below the water line of the yacht. The bottom of the soil tank is graded to the 4-inch outlet at the bottom to insure its complete emptying when the ejector acts. As a double protection in case of accident to the float in the soil tank or to the balance valve, it is suggested that a double bypass be placed between the balance valve and the ejector. This can be connected with both the steam pipe and the water pipe and used in all cases when the balance valve or float for any reason should not operate.

By the use of the Kenney Flushometer with its silent action and cleanliness, and the method here shown, the baths and lavatories are made as perfect as those in any private residence. As all parts are closely sealed and automatic in their action, no sewer gas or odor is possible throughout the vessel. This system will be recognized as a great step in advance over the noisy and laboriously-operated pump closets that have heretofore been thought necessary.

A supplementary catalogue issued by Barr Pumping Engine Co. of Philadelphia, illustrates the standard pumps manufactured by this firm, and also gives in convenient tables particulars of sizes, capacities, etc.

Low Rates to Pacific coast points.—The Nickel Plate road sells excursion tickets at special low rates to San Francisco and all Pacific coast points. Through palace sleepers and superb dining car service via the Nickel Plate road. Ask agents. 78, July 24.

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Train No. 47: For Akron, Canton and Chicago, leaves daily as heretofore at 6:35 P. M., carrying through coaches and Pullman sleeping car into Chicago, arriving at 7:00 A. M.

Lowest rates to Chicago, viz: First-class, \$8.50; second-class, \$7.00.

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Akron, Canton and Wheeling.....	3:25 P. M.	10:20 A. M.
Akron, Canton and Marietta.....	11:00 A. M.	2:10 P. M.

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C. L. KIMBALL, A. G. P. Agt., Cleveland, O.

One dollar Sunday outings—Beginning Sunday, May 28, and until further advised, parties of five or more traveling together on one party ticket going and returning same day, may travel on any train of the Nickel Plate road to and from any station west of Wallace Junction, Pa., not more than one hundred miles from starting point, for \$1 for each person. Where single fare is \$1 or less, individual tickets will be sold going and returning same day at one fare for the round trip. Confer with ticket agents for further particulars.

41, June 31

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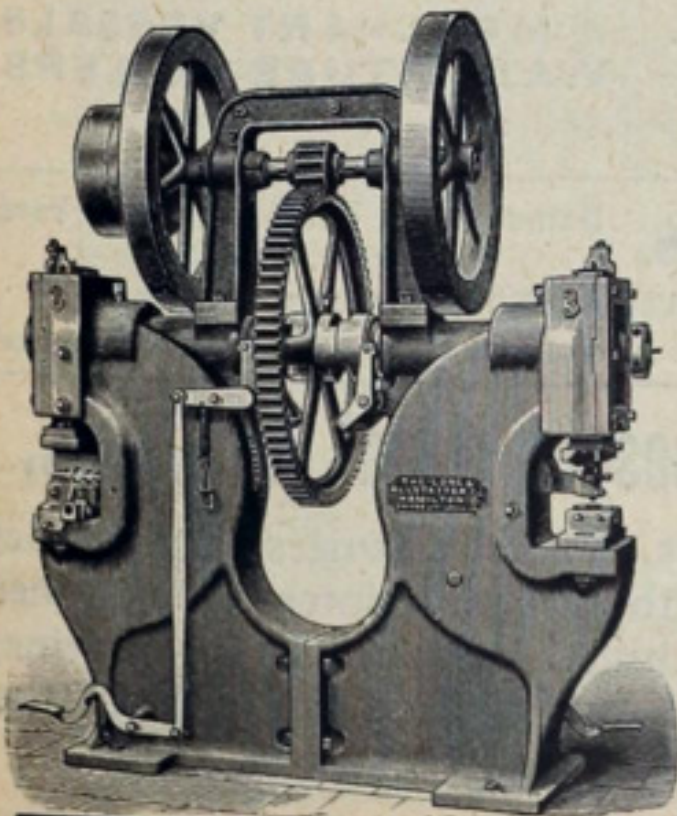
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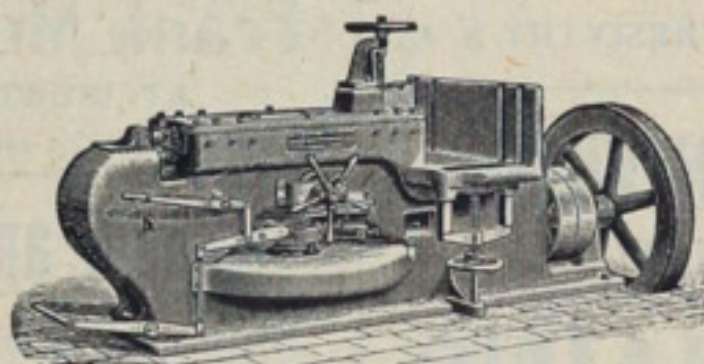
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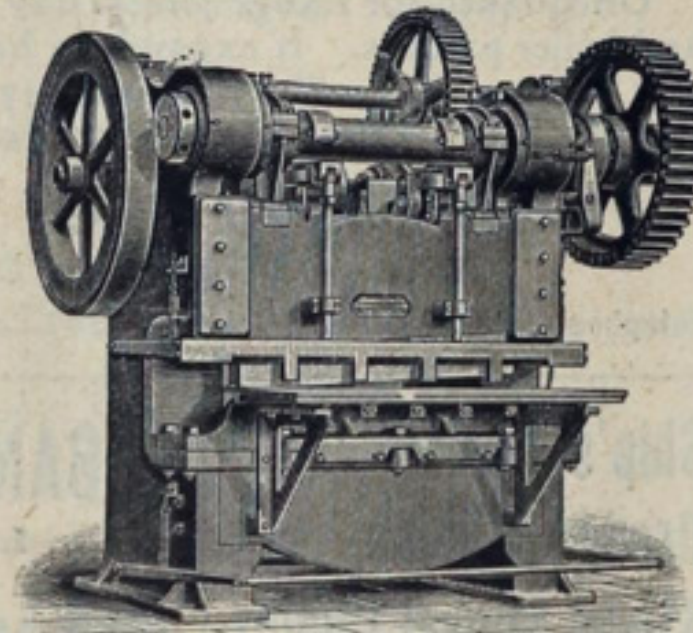
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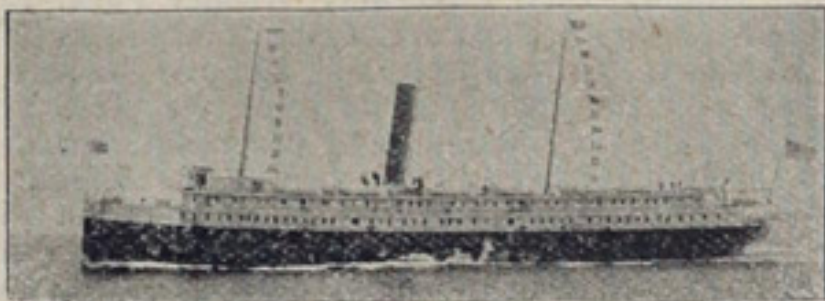
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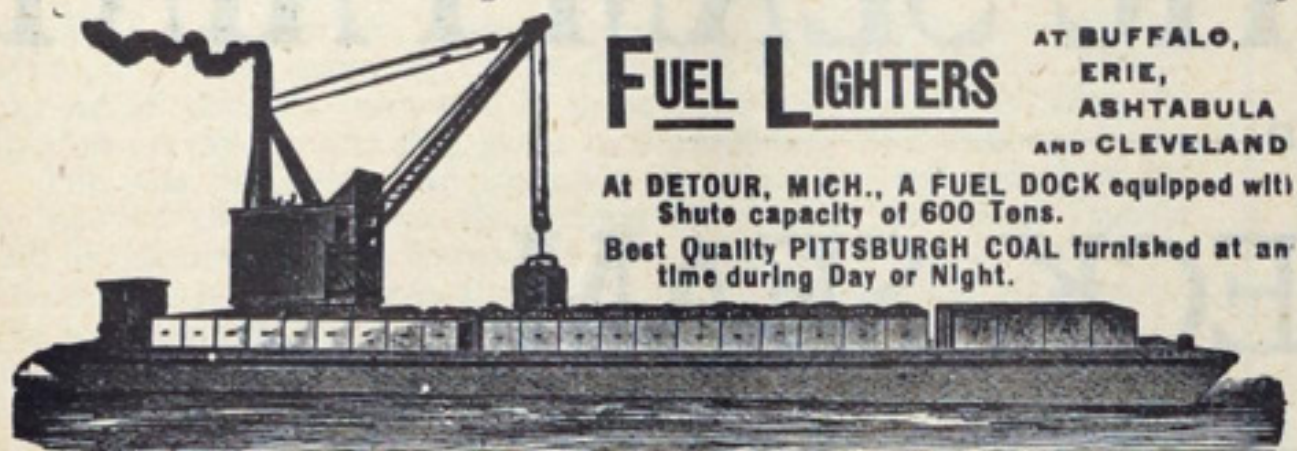
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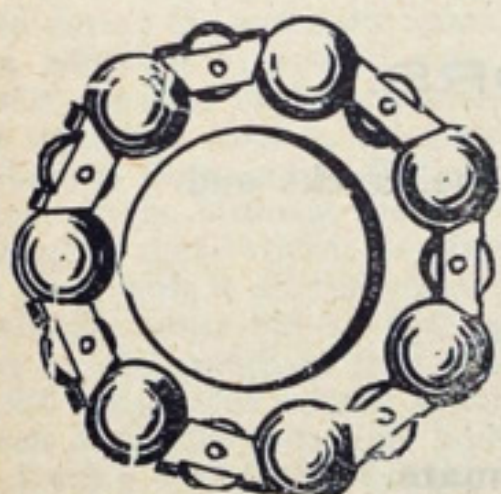
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DIVERS
ABOARD
AT
ALL TIMES

1899		July		1899	
SUN.	MON.	TUE.	WED.	THU.	FRI.
2	3	4	5	6	7
9	10	11	12	13	14
16	17	18	19	20	21
23	24	25	26	27	28
30	31				

10-100 TON JACKS
1-12 INCH HAWSER
1-9

TELEGRAPH
PARKER & MILLEN,
DETROIT, MICH.

U. S. Engineer Office, 185 Euclid Ave.,
Cleveland, O., May 31, 1899. Sealed proposals
for dredging in Straight Channel through
Maumee River and Bay, and for Construct-
ing Dike between Turn-out Channels, To-
ledo harbor, Ohio, will be received here un-
til two o'clock, P. M., standard time, Friday,
June 30, 1899, and then publicly opened.
Information furnished on application.
Jared A. Smith, Col., Engr's. June 29.

U. S. Engineer Office, Duluth, Minn., June
6, 1899. Sealed proposals for building exten-
sion to breakwater at Presque Isle Point,
Marquette, Mich., will be received here un-
til noon, July 6, 1899, and then publicly
opened. Information furnished on applica-
tion. Clinton B. Sears, Major, Engrs.
June 29.

U. S. Engineer Office, 57 Park St., Grand
Rapids, Mich., June 8, 1899. Sealed propo-
sals for Removal of part of Wreck of Steam-
er Horace A. Tuttle at Michigan City Har-
bor, Ind., will be received here until 3 p. m.
July 8, 1899, and then publicly opened. In-
formation furnished on application. Chester
Harding, Capt., Engrs. June 29.

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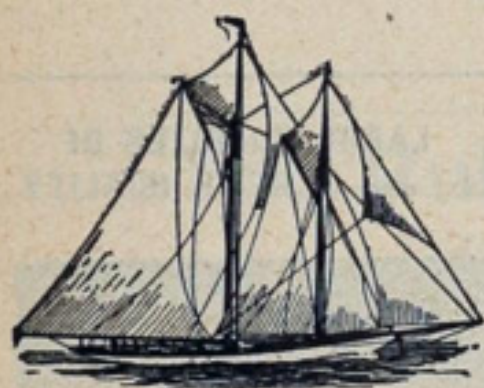
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PURE WHITE, JET BLACK AND WOOD COLORS.

Superior to all other compounds for filling deck seams, and all other seams above or below water line, cracks and checks in rails, bowsprits, masts, etc.



WE GUARANTEE:

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- Fourth—One pound of Elastic Seam Composition will fill as many running feet of seam as two pounds of best lead putty.

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Essington Ship Yard, Essington, Pa.
Detroit Boat Works, Detroit, Mich.
Wyandotte Pleasure Yacht Works, Wyandotte, Mich.
Wickes Bros., Saginaw, Mich.
Matthews & Co., Bascom, O.
Nelson Yacht Bldg. Co., Baltimore, Md.
Jos. Thomas & Son, Baltimore, Md.

S. W. Tilton & Son, Camden, N. J.
A. C. Brown & Son, Tottenville, N. Y.
Samuel Ayers & Son, Upper Nyack, N. Y.
T. M. Milton, Brewerton, N. Y.
C. C. Hantz, Yacht Designer, Quincy, Mass.
Sunders & West, Yacht Designers, Bristol, R. I.
A. Cary Smith & Barbey, Yacht Designers, 35 Nassau St., N. Y.
Gardner & Cox, Yacht Designers, 1 Broadway, New York.
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